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# 1982

## Census of Manufactures

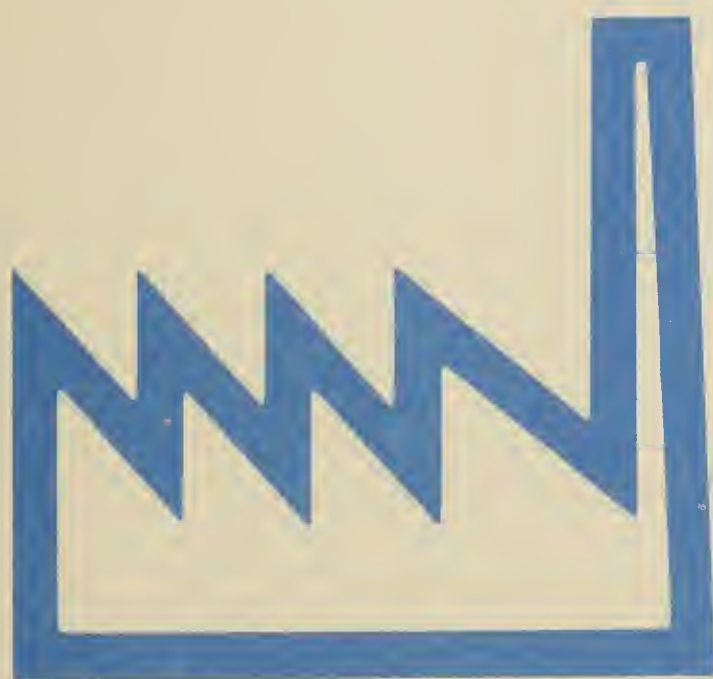
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MC82-1-34F

INDUSTRY SERIES

### Miscellaneous Fabricated Metal Products

Industries 3493, 3494, 3495, 3496, 3497, 3498, and 3499



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The publications  
from the 1982 Economic and  
Agriculture Censuses are dedicated  
to the memory of Shirley Kallek,  
Associate Director for Economic Fields.  
During her career at the Bureau of the  
Census (1955 to 1983), she continually  
directed efforts to improve  
the timeliness and accuracy of  
economic statistics.

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# 1982

## Census of Manufactures

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MC82-I-34F

INDUSTRY SERIES

### Miscellaneous Fabricated Metal Products

3493	Steel Springs, Except Wire
3494	Valves and Pipe Fittings
3495	Wire Springs
3496	Miscellaneous Fabricated Wire Products
3497	Metal Foil and Leaf
3498	Fabricated Pipe and Fittings
3499	Fabricated Metal Products, N.E.C.

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Issued March 1985



**U.S. Department of Commerce**  
**Malcolm Baldrige**, Secretary  
**Clarence J. Brown**, Deputy Secretary  
**Sidney Jones**, Under Secretary for  
Economic Affairs

**BUREAU OF THE CENSUS**  
**John G. Keane**,  
Director

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**Charles A. Waite, Associate Director for**  
**Economic Fields**

**John H. Berry, Assistant Director for**  
**Economic and Agriculture Censuses**

**INDUSTRY DIVISION**  
**Gaylord E. Worden, Chief**

**ACKNOWLEDGMENTS**—Many persons participated in the various activities of the 1982 Census of Manufactures. Primary direction of the program was performed by **Shirley Kellek**, Associate Director for Economic Fields (until May 1983), **Charles A. Waite**, her successor, and **Michael G. Farrell**, Assistant Director for Economic and Agriculture Censuses (until August 1984), and **John H. Berry**, his successor.

This report was prepared in the Industry Division under the general direction of **Rogar H. Buganhagan**, Chief (until April 1983), and **Gaylord E. Worden**, his successor. **John P. Govoni**, Assistant Chief for Census/Annual Survey of Manufactures (ASM) Programs, was responsible for the overall management of the census of manufactures. He guided the planning and implementation of the project and coordinated activities with other divisions.

Program responsibility was shared by the following individuals who participated importantly in the entire program: **John P. McNamee**, Chief, Minerals Branch; **Dale W. Gordon**, Chief, Census/ASM Durables Branch; **Michael J. Zempogna**, Chief, Census/ASM Nondurables Branch; **Bernard J. Fitzpatrick**, Chief, Census Special Reports Branch (until April 1983); and **Bruce M. Goldhrsch**, his successor; **Kenneth I. Hansen**, Chief, Annual Survey of Manufactures Branch; **Melcolm E. Bernhardt**, Chief, Current Durables Branch; and **Carole A. Ambler**, Chief, Current Nondurables Branch.

**John H. Ambler**, Chief, Rubber, Plastics, Glass, and Metals Section, assisted by **Milbren Thomas, Jr.**, was directly responsible for the analysis of the data and preparation of this report.

**Dr. Edward A. Robinson**, Senior Industry Statistician, made significant contributions to the basic economic concepts and content of the census. The computer processing systems were developed and coordinated under the direction of **William E. Norfolk**, Assistant Chief for Operations. **Sereh A. Mathis**, Chief, Census Programming Branch, was responsible for implementation of the computer systems, and the computer programs were prepared under the supervision of **Devld Onlons** and **Gareld S. Turnage**, assisted by **Barbara A. Lambert**. The mathematical techniques and quality control requirements were developed by **Preston J. Walte**, Assistant Chief for Research and Methodology, assisted by **Stecey Cole**, **Pemela McKae**, **Amelia M. Peregoy**, **Magdalena Remos**, and **Ann M. Stephens**.

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Planning, design, review, and composition of report forms were performed in the Administrative Services Division, **Robert L. Kirkland**, Chief.

Publication planning, design, editorial review, composition, and printing procurement were performed in the Publications Services Division, **Raymond J. Koski**, Chief.

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Mailout preparation and receipt operations, clerical and analytical review activities, data keying, and geocoding review were performed in the Data Preparation Division, **Don L. Adams**, Chief.

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# INTRODUCTION

## ECONOMIC CENSUSES OVER TIME

The early beginnings of America's industrial output were first measured in the United States in the 1810 Decennial Census and again in 1820, when questions on manufacturing were included with those for population. Beginning with the 1840 Decennial Census, there were enumerations of manufactures and mineral industries at 10-year intervals up to and including the year 1900 for manufactures and 1940 for mineral industries. The latter census was again taken for 1954, 1958, 1963, and 1967.

Because of the increasing dominance of manufacturing in the early 20th century, Congress directed that quinquennial censuses of manufactures be taken beginning in 1905. However, from 1919 through 1939, these censuses were conducted every 2 years. The need for war-related current surveys in the early 1940's postponed the next census of manufactures until 1948 (for 1947). That census was again taken for 1954, 1958, 1963, and 1967.

Retail and wholesale trade data were first collected in 1930, and in 1933 information on selected service industries was added to the data-collection operation. These business censuses, as they were called, were again taken for 1935, 1939 (as part of the 1940 decennial program), 1948, 1954, 1958, 1963, and 1967.

Information on construction industries was obtained first in 1930 and again for 1935 and 1939. Data for the full spectrum of construction industries were not gathered again until 1968 (for 1967).

The need for transportation data to supplement information available from existing governmental or private sources was recognized by Congress in the late 1950's and early 1960's. The census of transportation (consisting of several surveys) was taken first for 1963 and again for 1967.

Since 1967, all of the above censuses have been taken quinquennially as part of the Census Bureau's economic census program. (For the 1977 censuses, the coverage of the service industries was broadened from "selected services" to "all services, except religious organizations and private households." A total of 41 additional four-digit standard industrial classifications<sup>1</sup> (SIC's) in 7 SIC major groups was added to the scope of the census. While most of the industries included for the first time for 1977 were covered again for 1982, some were not, i.e., hospitals; elementary and secondary schools; colleges, universities, and professional schools; junior colleges and technical institutes; labor unions and similar labor organizations; and political organizations.)

The first manufacturing census for an outlying area was conducted in Puerto Rico for the year 1909. Thereafter, with the exception of 1929, a census was taken at 10-year intervals through 1949. The first censuses of retail trade, wholesale trade, and selected service industries in Puerto Rico were conducted for 1939. These censuses also were taken for the years 1949, 1954, 1958, 1963, and 1967. A census of construction industries was introduced first in Puerto Rico for 1967. These censuses of Puerto Rico have been taken since then for the years 1972, 1977, and 1982.

Censuses of manufactures, retail trade, wholesale trade, and selected service industries were conducted in Guam and the

Virgin Islands of the United States for 1958, 1963, 1967, 1972, 1977, and 1982. Censuses of mineral industries were taken in the Virgin Islands of the United States for the years 1958, 1963, and 1967 but not since that time. A census of construction industries was also undertaken in these areas for 1972, 1977, and 1982.

Retail trade, wholesale trade, selected service industries, manufacturing, and construction industries were canvassed for the first time in the Northern Mariana Islands in 1983 (for 1982).

For 1982, the economic censuses and agriculture censuses were conducted concurrently.

## USES OF THE ECONOMIC CENSUSES

The economic censuses are the major source for facts about the structure and functioning of the Nation's economy and provide essential information for government, business, industry, and the general public. They provide an important part of the framework for such composite measures as the gross national product, input-output measures, indexes of industrial production, and indexes measuring productivity and price levels. Information from the censuses is used to establish sampling frames and as benchmarks for current surveys of business activity, which are essential for measuring short-term economic conditions.

State and local governments use census data to assess business activities within their jurisdictions. The private sector uses the data to forecast general economic conditions; analyze sales performance; lay out sales territories; allocate funds for advertising; decide on locations for new plants, warehouses, or stores; and measure potential markets in terms of size, geographic areas, kinds of business, and kinds of products made or sold.

Following every census, thousands of businesses and other users purchase reports. Likewise, census facts are disseminated widely by trade associations, business journals, and newspapers. Volumes containing census statistics are available in most major public and college libraries. All 1982 data are available on microfiche from the U.S. Government Printing Office and most data on computer tape from the Census Bureau. Finally, the more than 50 State Data Centers also are suppliers of economic census statistics.

## AUTHORITY AND SCOPE OF THE ECONOMIC CENSUSES

The economic censuses are required by law under title 13 of the United States Code, sections 131, 191, and 224, which directs that they be taken at 5-year intervals for the years ending in 2 and 7. The 1982 Economic Censuses covered manufacturing, mining, construction industries, retail trade, wholesale trade, service industries, and selected transportation activities. Special programs also cover minority-owned and women-owned businesses. The next economic censuses are scheduled to be taken in 1988 for the year 1987.

<sup>1</sup>Standard Industrial Classification Manual: 1972. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. 1977 Supplement. Stock No. 003-00500176-0.



# CENSUS OF MANUFACTURES

## General

The 1982 Census of Manufactures is the 31st census of manufactures of the United States. For 1982, it was conducted jointly with the censuses of mineral industries, construction industries, retail and wholesale trades, service industries, selected transportation activities, and minority-owned and women-owned businesses.

This report, from the 1982 Census of Manufactures, is one of a series of 82 industry reports, each of which provides statistics for groups of related industries. Additional separate reports will be issued for each State and on special subjects, such as size of establishments, legal form of organization, and fuels and electric energy consumed.

These separate reports will subsequently be issued as portions of the final census volumes. Volume I, Subject Statistics, will show comparative statistics for industries, States, and standard metropolitan statistical areas. It also will show selected subjects, such as concentration ratios in manufacturing, selected materials consumed, manufacturing activity in government establishments, and water use in manufacturing. Volume II, Industry Statistics, will be a consolidation of reports for the 82 groups of industries showing the same information that is shown in this report. Volume III, Geographic Area Statistics, will contain establishment-based data (number of establishments, employment, payroll, value added by manufacture, and capital expenditures) for each State and its important standard metropolitan statistical areas, counties, and places, by industry groups and important individual industries. Totals for "all manufacturing" will be shown for counties and places with more than 450 manufacturing employees. The introduction to the final volumes will discuss, at greater length, many of the subjects described in this introduction. For example, the volume text will discuss the relationship of value added by manufacture to National income by industry of origin, the changes in statistical concepts over the history of the censuses, and the valuation problems arising from intracompany transfers between manufacturing plants of a company and between manufacturing plants and sales offices and sales branches of a company.

## Scope of Census and Definition of Manufacturing Industries

The 1982 Census of Manufactures covers all establishments employing one person or more primarily engaged in manufacturing as defined in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 Supplement.<sup>1</sup> This is the system of industrial classification developed over a period of years by experts on classification in government and private industry under the guidance of the Office of Management and Budget. This system of classification is in general use among government agencies as well as organizations outside the government.

The SIC manual defines manufacturing as the mechanical or chemical transformation of inorganic or organic substances into new products. The assembly of component parts of products is also considered to be manufacturing if the resulting product is neither a structure nor other fixed improvement. These activities are usually carried on in plants, factories, or mills that characteristically use power-driven machines and materials handling equipment.

<sup>1</sup>Standard Industrial Classification Manual: 1972. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. 1977 Supplement. Stock No. 003-00500176-0.

Manufacturing production is usually carried on for the wholesale market, for transfers to other plants of the same company, or to the order of industrial users rather than for direct sale to the household consumer. Some manufacturers in a few industries sell chiefly at retail to household consumers through the mail, through house-to-house routes, or through salespersons. Some activities of a service nature (enameling, engraving, etc.) are included in manufacturing when they are performed primarily for the trade. They are considered nonmanufacturing when they are performed primarily to the order of the household consumer.

## Relationship Between Annual Survey of Manufactures and Census of Manufactures

The Bureau of the Census conducts the annual survey of manufactures (ASM) in each of the 4 years between the censuses of manufactures. The ASM is based on a scientifically selected sample of approximately 55,000 establishments and collects the same industry statistics (employment, payroll, value of shipments, etc.) as the census of manufactures. In addition to collecting the information normally requested on the census form, the establishments in the ASM sample are requested to supply detailed information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services.

## Establishment Basis of Reporting

The census of manufactures and the annual survey of manufactures are conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1982, as in earlier years, a minimum size limit was set for including establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

This report excludes information for separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company (see Auxiliaries).

## Manufacturing Universe and Census Report Forms

The 1982 Census of Manufactures universe includes approximately 345,000 establishments. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures. The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in this publication are described below.

### 1. Small Single-Unit Companies Not Sent a Report Form

In the 1982 Census of Manufactures, approximately 140,000 small single-establishment companies were excused from filing reports. Selection of these small



establishments was done on an industry-by-industry basis and was based on annual payroll and total shipments data as well as on the industry classification codes contained in the administrative records of other Federal agencies. The cutoffs were selected so that these administrative records cases would account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed report forms.

Information on the physical location of the establishment, as well as information on payrolls, receipts (shipments), and industry classification, was obtained from the administrative records of other Federal agencies under special arrangements, which safeguarded their confidentiality. Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these establishments but were included in the product and material "not specified by kind" (n.s.k.) categories.

The industry classification codes included in the administrative records files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to the four-digit SIC level. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes these administrative record cases were given only a two- or three-digit SIC group. For the 1982 Census of Manufactures, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the four-digit SIC level. Establishments that did not return the classification form were coded later to those four-digit SIC industries identified as "not elsewhere classified" (n.e.c.) within the given two- or three-digit industry groups.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

## 2. Establishments Sent a Report Form

The 205,000 establishments covered in the mail canvass were divided into three groups:

**a. ASM sample establishments**—This group consisted of approximately 55,000 establishments covering all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size (see appendix, Annual Survey of Manufactures).

In a census of manufactures year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll,

and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply information on assets, capital expenditures, retirements, depreciation, rental payments, supplemental labor costs, and costs of purchased services. Results of the ASM inquiries are included in tables 3c and 3d of this report.

The census part of the report form is one of approximately 200 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the approximately 450 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries, as well as secondary products and miscellaneous services that establishments classified in these industries were likely to be performing. Respondents were requested to identify the products, the value of each product, and, in a large number of cases, the quantity of the product shipped during the survey year. Space was also provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry, which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

Finally, a wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

### **b. Large and medium establishments (non-ASM)**—

Approximately 100,000 establishments were included in this group. A variable cutoff, based on administrative records payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive one of the approximately 200 census of manufactures regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

### **c. Small single-unit establishments (non-ASM)**—

This group consisted of approximately 50,000 establishments. For those industries where application of the variable cutoff for administrative records cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or "short" form was used. These establishments received one of the approximately 80 versions of the short form, which requested summary product and material data and totals but no details on employment, payrolls, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics; the same



data were collected on the short as well as the long form. However, detailed information on materials consumed was not collected on the short form; thus its use would increase the values of the n.s.k. categories.

## Auxiliaries

In this industry report, the data on employment and payroll are limited to operating manufacturing establishments. The census report form filed for auxiliaries (ES-9200) requested a description of the activity of the establishments serviced. However, the auxiliaries were coded only to the two-digit major group of the establishments they served; whereas, the operating establishments were coded to a four-digit manufacturing industry. Data for the approximately 10,000 separately operated auxiliaries are included in the paperbound geographic area series, the bound volumes of the census of manufactures, and in a report issued as part of the 1982 Enterprise Statistics survey.

Auxiliaries are establishments whose employees are primarily engaged in performing supporting services for other establishments of the same company, rather than for the general public or for other business firms. They can be at different locations from the establishments served or at the same location as one of those establishments but not operating as an integral part thereof and serving two or more establishments. Where auxiliary operations are conducted at the same location as the manufacturing operation and operate as an integral part thereof, they usually are included in the report for the operating manufacturing establishment.

Included in the broad category of auxiliaries are administrative offices. Employees in administrative offices are concerned with the general management of multiestablishment companies, i.e., with the general supervision and control of two units or more, such as manufacturing plants, mines, sales branches, or stores. The functions of these employees may include (1) program planning, including sales research and coordination of purchasing, production, and distribution; (2) company purchasing, including general contracts and purchasing methods; (3) company financial policy and accounting, tax accounting, company sales and profit reports, and personnel accounting; (4) general engineering, including design of product machinery and equipment, and direction of engineering effort conducted at the individual operation locations; (5) direction of company personnel matters; and (6) legal and patent matters.

Other types of auxiliaries serving the plants or central management of the company include purchasing offices, sales promotion offices, research and development organizations, etc.

## Industry Classification of Establishments

Each of the establishments covered in the census was classified in one of approximately 450 manufacturing industries in accordance with the industry definitions in the SIC system. Under this system of classification, an industry is generally defined as a group of establishments producing a single product or a closely related group of products. The product groupings from which industry classifications are derived are based on considerations such as similarity of manufacturing processes, types of materials used, types of customers, and the like. The resulting group of plants must be significant in terms of its number, value added by manufacture, value of shipments, and number of employees. The system operates in such a way that the definitions progressively became narrower with successive additions of numerical digits. There are 20 major groups (two-digit SIC), 143 industry groups (three-digit SIC), and approximately 450

industries (four-digit SIC). The product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are about 1,500 classes of products, identified by a five-digit code, and about 11,000 products, identified by a seven-digit code. The seven-digit products are considered the primary products of the industry with the same four digits.

Accordingly, an establishment is usually classified in a particular industry on the basis of its major activity during a particular year, i.e., production of the products primary to that industry exceeds, in value, production of the products primary to any other single industry. In a few instances, however, the industry classification of an establishment is not only determined by the products it makes but also by the process employed in making those products. For example, establishments engaged in blast furnace operations, refining of nonferrous metals from ore, or rolling and drawing of nonferrous metals (processes which involve heavy capitalization in specialized equipment) would be classified according to the process used during a census year. These establishments then would be "frozen" in that industry during the following ASM years.

In either a census or ASM year, establishments included in the ASM sample with certainty weight, other than those involved with heavily capitalized activities described above, are reclassified by industry only if the change in the primary activity from the prior year is significant or the change has occurred for two successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year (see appendix, Annual Survey of Manufactures). However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The result of these rules covering the switching of plants from one industry classification to another is that, at the aggregate level, some industries comprise different mixes of establishments between survey years, and establishment data for such industry statistics as employment and payroll may be tabulated in different industries between survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the four-digit SIC level, should be viewed with caution. This is true particularly for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of establishments.

While some establishments produce only the primary products of the industry in which they are classified, all establishments of an industry rarely specialize to this extent. The industry statistics (employment, inventories, value added by manufacture, total value of shipments including resales and miscellaneous receipts, etc.) shown in tables 1a through 5a, therefore, reflect not only the primary activities of the establishments in that industry but also their secondary activities. The product statistics in tables 6a through 6c represent the output of all establishments whether or not they are classified in the same industry as the product. For this reason, in relating the industry statistics, especially the value of shipments to the product statistics, the



composition of the industry's output shown in table 5b should be considered.

The extent to which industry and product statistics may be matched with each other is measured by two ratios, which are computed from the figures shown in table 5b. The first of these ratios, called the primary product specialization ratio, measures the proportion of product shipments (both primary and secondary) of the establishments classified in the industry represented by the primary products of those establishments. The second ratio, called the coverage ratio, is the proportion of primary products shipped by the establishments classified in the industry to total shipments of such products by all manufacturing establishments.

However, establishments making products falling into the same industry category may use a variety of processes and materials to produce them. Also, the same industry classification (based on end products) may include both establishments that are highly integrated and those that put only the finishing touches on an already highly fabricated item. For example, the refrigeration industry includes instances of almost complete integration (production of the compressor, condensing unit, electric motor, casting, stamping of the case, and final assembly) all carried on at one plant. On the other hand, the condensing unit, the motor, and the case may be purchased and only assembled into the finished product.

In some instances, separate industry categories have been established for integrated and nonintegrated establishments. For other industries, the census provides separate statistics on the production of intermediate commodities made and used in the producing plant. For some industries characterized by many plants of the same company, separate figures on interplant transfer of products usually are shown.

Differences in the integration of production processes, types of operations, and alternatives in types of materials used should be considered when relating the industry statistics (employment, payrolls, value added, etc.) to the product and material data.

## Value of Shipments for the Industry Compared With Value of Product Shipments

This industry report shows value of shipments data for industries and products. In tables 1a through 5a, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Product shipments shown in table 6a represent the total value of shipments of products classified as primary to an industry that were shipped by all manufacturing establishments regardless of their industry classification.

## CENSUS DISCLOSURE RULES

In accordance with Federal law governing census reports, no data are published that would disclose the data for an individual establishment or company. However, the number of establishments classified in a specific industry is not considered a disclosure, so this item may be given even though other information is withheld.

## MANUFACTURES—INDUSTRY SERIES

The disclosure analysis for the industry statistics in tables 1a through 5a of this report is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line has been suppressed. However, the suppressed data are included in higher level totals. Additional disclosure analysis is performed for new capital expenditures that can be suppressed even though value of shipments data are publishable.

## MICROFICHE AND COMPUTER TAPES

All the data in this report are available on microfiche. Selected data are also available on computer tape.

In addition to selected published data being on computer tape, one major data series, the location of manufacturing plants, will be available only on computer tape. This series presents the number of establishments by employment size class by four-digit SIC industry codes for States, counties, and places of 2,500 inhabitants or more. These data are available for both State and county by industry, and State and place by industry.

Microfiche reports are sold by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Computer tapes are sold by the Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, D.C. 20233.

## SPECIAL TABULATIONS

Special tabulations of data collected in the 1982 Census of Manufactures may be obtained on computer tape or in tabular form. The data will be in summary form and subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) as are the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief, Industry Division, Bureau of the Census, Washington, D.C. 20233.

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this publication:

- Represents zero.
- (D) Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
- (NA) Not available.
- (NC) Not comparable.
- (S) Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
- (X) Not applicable.
- (Z) Less than half the unit shown.
- n.e.c. Not elsewhere classified.
- n.s.k. Not specified by kind.
- pt. Part.
- r Revised.
- SIC Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, doz, bbl, and s tons, are used in the customary sense.



# Users' Guide for Locating Statistics

[For explanation of terms, see appendixes]

	Item	Four-digit industry statistics		
		Historical	Operating ratios	By geographic area
1	Number of companies . . . . .	1a		
2	Number of manufacturing establishments . . . . .	1a		2
	Employment and payroll:			
3	Number of employees . . . . .	1a	1b	2
4	Payroll . . . . .	1a	1b	2
5	Supplemental labor costs . . . . .			
6	Production workers . . . . .	1a	1b	2
7	Production-worker hours . . . . .	1a	1b	2
8	Production-worker wages . . . . .	1a	1b	2
	Shipments, cost of materials, and value added:			
9	Value of shipments (four-digit) . . . . .	1a	1b	2
10	Product class shipments (five-digit) . . . . .			
11	Product shipments (seven-digit) . . . . .			
12	Value added by manufacture . . . . .	1a	1b	2
13	Cost of materials . . . . .	1a	1b	2
14	Fuels and electric energy . . . . .			
15	Materials consumed by kind . . . . .			
	Inventories:			
16	Total, end of year . . . . .	1a		
17	By method of valuation . . . . .			
18	By stage of fabrication . . . . .			
	Capital expenditures, assets, rental payments, and purchased services:			
19	New capital expenditures . . . . .	1a		2
20	Used plant and equipment expenditures . . . . .			
21	Gross assets . . . . .			
22	Depreciation . . . . .			
23	Retirements of buildings and machinery . . . . .			
24	Rental payments . . . . .			
25	Purchased services . . . . .			
	Ratios:			
26	Specialization . . . . .	1a		
27	Coverage . . . . .	1a		

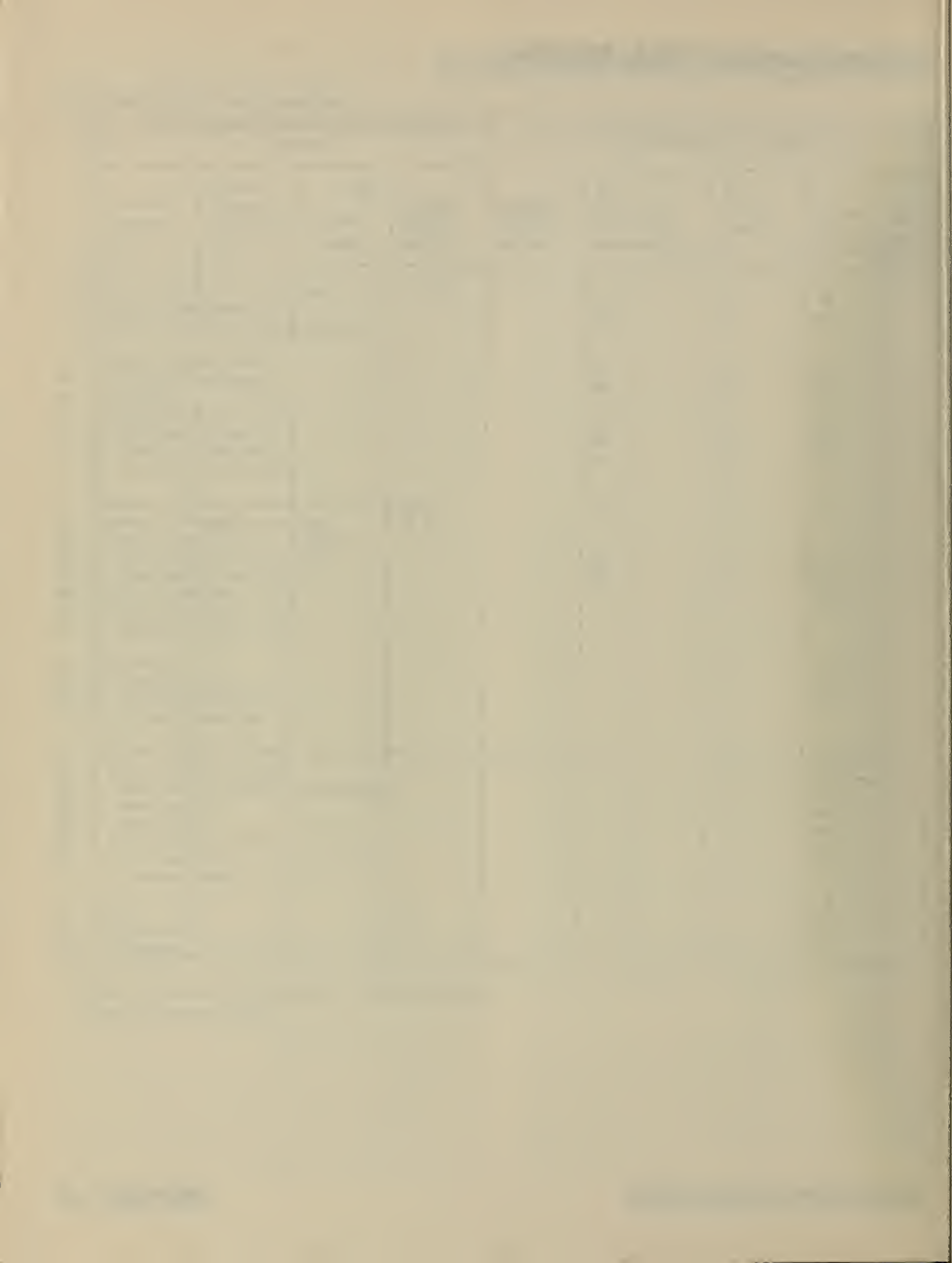
\*Number of companies with shipments of over \$100 thousand.

\*\*Detailed information shown.



in This Report by Table Number

Four-digit industry statistics—Con.				Five-digit product class and seven-digit product statistics				
Summary and supplemental	By employment size	By industry and product class specialization	Materials consumed by kind	Industry-product analysis	Product shipments	Product class by geographic area	Historical product class	
3a					*6a			1
**3a	4	5a						2
3a	4	5a						3
3a	4	5a						4
**3d								5
**3a	4	5a						6
**3a	4	5a						7
3a	4	5a						8
3a	4	5a		5b, 5c				9
				5b, 5c	6a	6b	6c	10
					6a			11
3a	4	5a						12
**3a	4	5a						13
3a, 3d			7					14
								15
3b, 3c	4							16
3b, 3c								17
3b								18
**3a, **3d	4	5a						19
**3a, **3d								20
**3d								21
**3d								22
**3d								23
**3d								24
**3d								25
3a				5b				26
3a				5b				27



# Miscellaneous Fabricated Metal Products

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# DESCRIPTION OF INDUSTRIES AND SUMMARY OF FINDINGS

## MISCELLANEOUS FABRICATED METAL PRODUCTS

This report shows 1982 Census of Manufactures statistics for establishments classified in each of the following industries:

### SIC Code and Title

3493	Steel Springs, Except Wire
3494	Valves and Pipe Fittings
3495	Wire Springs
3496	Miscellaneous Fabricated Wire Products
3497	Metal Foil and Leaf
3498	Fabricated Pipe and Fittings
3499	Fabricated Metal Products, N.E.C.

The industry statistics (employment, payroll, cost of materials, value of shipments, inventories, etc.) are reported for each establishment as a whole. Aggregates of such data for an industry reflect not only the primary activities of the establishments but also their activities in the manufacture of secondary products as well as their miscellaneous activities (contract work on materials owned by others, repair work, etc.). This fact should be taken into account in comparing industry statistics (tables 1a-5a) with product statistics (table 6a) showing shipments by all industries of the primary products of the specified industry. The extent of the "product mix" is indicated in table 5b, which shows the value of primary and secondary products shipped by establishments classified in the specified industry and the value of primary products of the industry shipped as secondary products by establishments classified in other industries.

Small single-unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. For these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated), data on payrolls and receipts were obtained from administrative records of other government agencies. The remaining statistics were developed from industry averages.

Establishment data were tabulated based on industry definitions contained in the 1972 Standard Industrial Classification (SIC) Manual and its 1977 supplement.<sup>1</sup>

## INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE

This industry comprises establishments primarily engaged in the manufacture of leaf springs, hot wound springs, and coiled flat springs. Establishments primarily engaged in the manufacture of wire springs are classified in industry 3495.

In the 1982 Census of Manufactures, Industry 3493, Steel Springs, Except Wire, recorded employment of 5.2 thousand.

The total value of shipments for establishments classified in this industry was \$414 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 37 percent below the 8.2 thousand reported in 1977. The leading States in employment in 1982 were Pennsylvania, Illinois, Indiana, and Connecticut, accounting for approximately 64 percent of the industry's 1982 employment. This represents a shift from 1977 when Pennsylvania, Indiana, Illinois, and Michigan accounted for approximately 60 percent of the industry's employment.

Compared with 1981, employment decreased 9 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3493 shipped \$300 million of products primary to the industry, \$71 million of secondary products, and had \$42 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 81 percent (specialization ratio). In 1977, this specialization ratio was 84 percent.

Establishments in this industry also accounted for 59 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 72 percent. The products primary to industry 3493, no matter in what industry they were produced, appear in table 6a and aggregate to \$511 million in current prices.

The total cost of materials and services used by establishments classified in the steel springs, except wire, industry amounted to \$205 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 7 percent of total value of shipments.

## INDUSTRY 3494, VALVES AND PIPE FITTINGS

This industry comprises establishments primarily engaged in the manufacture of pipe fittings and valves for controlling the flow of liquids or gases in pipes and mains, and for machinery. Establishments primarily engaged in the manufacture of faucets,

<sup>1</sup>Standard Industrial Classification Manual: 1972. For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 041-001-00066-6. 1977 Supplement. Stock No. 003-005-00176-0.



spigots, and similar plumbers' brass goods and fittings are classified in industry 3432; flexible metal hose and tubing in industry 3599, and fittings and couplings for garden hose in industry 3429.

In the 1982 Census of Manufactures, Industry 3494, Valves and Pipe Fittings, recorded employment of 115.2 thousand. The total value of shipments for establishments classified in this industry was \$9,040 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 6 percent above the 108.7 thousand reported in 1977. The leading States in employment in 1982 were Ohio, Texas, California, and Pennsylvania, accounting for approximately 38 percent of the industry's 1982 employment. This represents a shift from 1977 when Ohio, Illinois, Pennsylvania, and Texas accounted for approximately 35 percent of the industry's employment.

Compared with 1981, employment decreased 3 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3494 shipped \$7,796 million of products primary to the industry, \$851 million of secondary products, and had \$393 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 90 percent (specialization ratio). In 1977, this specialization ratio was 89 percent.

Establishments in this industry also accounted for 90 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 88 percent. The products primary to industry 3494, no matter in what industry they were produced, appear in table 6a and aggregate to \$8,705 million in current prices.

The total cost of materials and services used by establishments classified in the valves and pipe fittings industry amounted to \$3,735 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 6 percent of total value of shipments.

## **INDUSTRY 3495, WIRE SPRINGS**

This industry comprises establishments primarily engaged in the manufacture of wire springs. Establishments primarily engaged in the assembly of wire bedsprings or seats are classified in major group 25.

In the 1982 Census of Manufactures, Industry 3495, Wire Springs, recorded employment of 17.9 thousand. The total value

of shipments for establishments classified in this industry was \$1,104 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 18 percent below the 21.7 thousand reported in 1977. The leading States in employment in 1982 were Illinois, Michigan, California, and Pennsylvania, accounting for approximately 45 percent of the industry's 1982 employment. Data for Pennsylvania have been withheld to avoid disclosing data for individual companies. This represents a shift from 1977 when Michigan, Illinois, Kentucky, and California accounted for approximately 55 percent of the industry's employment.

Compared with 1981, employment increased 10 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3495 shipped \$995 million of products primary to the industry, \$81 million of secondary products, and had \$28 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 92 percent (specialization ratio). In 1977, this specialization ratio also was 92 percent.

Establishments in this industry also accounted for 93 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio also was 92 percent. The products primary to industry 3495, no matter in what industry they were produced, appear in table 6a and aggregate to \$1,064 million in current prices.

The total cost of materials and services used by establishments classified in the wire springs industry amounted to \$499 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 17 percent of total value of shipments.

## **INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS**

This industry comprises establishments primarily engaged in the manufacture of products from purchased wire, such as noninsulated wire rope and cable; fencing, screening, netting, and paper machine wire cloth; and hangers, paper clips, kitchenware, and wire carts. Rolling mills engaged in the manufacture of wire products are classified in major group 33; establishments manufacturing nonferrous wire nails and spikes in industry 3399;



those drawing and insulating nonferrous wire in industry 3357; and those manufacturing wire springs in industry 3495.

In the 1982 Census of Manufactures, Industry 3496, Miscellaneous Fabricated Wire Products, recorded employment of 36.8 thousand. The total value of shipments for establishments classified in this industry was \$2,357 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 14 percent above the 32.4 thousand reported in 1977. The leading States in employment in 1982 were Illinois, California, Pennsylvania, and New York, accounting for approximately 35 percent of the industry's 1982 employment. These same States were the leaders in 1977, when they accounted for approximately 35 percent of the industry's employment, although there has been some shift in the relative importance of individual States.

Compared with 1981, employment increased 34 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3496 shipped \$2,103 million of products primary to the industry, \$151 million of secondary products, and had \$103 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 93 percent (specialization ratio). In 1977, this specialization ratio was 91 percent.

Establishments in this industry also accounted for 52 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 37 percent. The products primary to industry 3496, no matter in what industry they were produced, appear in table 6a-1 and aggregate to \$4,041 million in current prices.

The total cost of materials and services used by establishments classified in the miscellaneous fabricated wire products industry amounted to \$1,172 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 16 percent of total value of shipments.

## **INDUSTRY 3497, METAL FOIL AND LEAF**

This industry comprises establishments primarily engaged in the manufacture of gold, silver, tin, and other metal foil (including converted metal foil) and leaf. This industry also includes establishments primarily engaged in converting metal foil (including aluminum) into wrappers, cookware, dinnerware, and containers, except bags and liners. Establishments primarily engaged in the manufacture of plain aluminum foil are classified in industry 3353.

In the 1982 Census of Manufactures, Industry 3497, Metal Foil and Leaf, recorded employment of 10.8 thousand. The total value of shipments for establishments classified in this industry was \$1,831 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 15 percent above the 9.4 thousand reported in 1977. The leading States in employment in 1982 were Virginia, New Jersey, Ohio, and Kentucky, accounting for approximately 60 percent of the industry's 1982 employment. Data for Virginia and Kentucky have been withheld to avoid disclosing data for individual companies. This represents a shift from 1977 when Ohio, North Carolina, New Jersey, and Virginia accounted for approximately 55 percent of the industry's employment.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3497 shipped \$1,433 million of products primary to the industry, \$341 million of secondary products, and had \$57 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 81 percent (specialization ratio). In 1977, this specialization ratio was 80 percent.

Establishments in this industry also accounted for 82 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 63 percent. The products primary to industry 3497, no matter in what industry they were produced, appear in table 6a and aggregate to \$1,758 million in current prices.

The total cost of materials and services used by establishments classified in the metal foil and leaf industry amounted to \$1,157 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 20 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 3 percent of total value of shipments.

## **INDUSTRY 3498, FABRICATED PIPE AND FITTINGS**

This industry comprises establishments primarily engaged in fabricating pipe and pipe fittings from purchased pipe by cutting, threading, bending, etc. Establishments primarily engaged in the manufacture of cast iron pipe and fittings, including cast and forged pipe fittings which have been machined and threaded, are classified in industry 3321.

In the 1982 Census of Manufactures, Industry 3498, Fabricated Pipe and Fittings, recorded employment of 32.7 thousand. The total value of shipments for establishments classified in this industry was \$3,116 million.



The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 16 percent above the 28.2 thousand reported in 1977. The leading States in employment in 1982 were Texas, Pennsylvania, Michigan, and Illinois, accounting for approximately 49 percent of the industry's 1982 employment. This represents a shift from 1977 when Texas, Pennsylvania, Michigan, and California accounted for approximately 50 percent of the industry's employment.

Compared with 1981, employment increased 2 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3498 shipped \$2,866 million of products primary to the industry, \$97 million of secondary products, and had \$153 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 97 percent (specialization ratio). In 1977, this specialization ratio was 94 percent.

Establishments in this industry also accounted for 94 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 93 percent. The products primary to industry 3498, no matter in what industry they were produced, appear in table 6a and aggregate to \$3,035 million in current prices.

The total cost of materials and services used by establishments classified in the fabricated pipe and fittings industry amounted to \$1,674 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 13 percent of total value of shipments.

## **INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.**

This industry comprises establishments primarily engaged in the manufacture of fabricated metal products, not elsewhere classified, such as resistive fire-or-burglary steel safes and vaults;

and similar resistive fire-or-burglary products; and collapsible tubes of thin flexible metal. Establishments primarily engaged in the manufacture of concrete grave vaults are classified in industry 3272.

In the 1982 Census of Manufactures, Industry 3499, Fabricated Metal Products, N.E.C., recorded employment of 65.0 thousand. The total value of shipments for establishments classified in this industry was \$4,406 million.

The value of shipments figure shown above is in current (1982) prices. All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently, when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The employment figure shown above was 8 percent below the 70.8 thousand reported in 1977. The leading States in employment in 1982 were California, Ohio, Illinois, and Pennsylvania, accounting for approximately 35 percent of the industry's 1982 employment. This represents a shift from 1977 when Ohio, Illinois, California, and New York accounted for approximately 40 percent of the industry's employment.

Compared with 1981, employment decreased 14 percent. The 1981 data are based on the Bureau's annual survey of manufactures (ASM), which is a sample survey conducted each year between censuses.

Establishments in virtually all industries ship secondary products as well as products primary to the industry to which they are classified and have some miscellaneous receipts, such as resales and contract receipts. In current prices, industry 3499 shipped \$3,674 million of products primary to the industry, \$323 million of secondary products, and had \$409 million of miscellaneous receipts. Thus, the ratio of primary products to the total of both secondary and primary products shipped by establishments in the industry was 92 percent (specialization ratio). In 1977, this specialization ratio was 89 percent.

Establishments in this industry also accounted for 87 percent of products considered primary to the industry no matter where they actually were produced (coverage ratio). In 1977, the coverage ratio was 83 percent. The products primary to industry 3499, no matter in what industry they were produced, appear in table 6a and aggregate to \$4,211 million in current prices.

The total cost of materials and services used by establishments classified in the fabricated metal products, n.e.c., industry amounted to \$2,040 million in current prices. Data on specific materials consumed appear in table 7.

Establishments of single-unit companies in this industry with up to 5 employees were excluded from the mail portion of the census. The data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were obtained from administrative records of other agencies or developed from industry averages. These establishments accounted for 19 percent of total value of shipments.



**Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years**

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year <sup>1</sup>	Companies <sup>2</sup> (no.)	All establishments <sup>3</sup>		All employees		Production workers			Value added by manufacture <sup>4</sup> (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories <sup>4</sup> (million dollars)	Ratios	
		Total (no.)	With 20 employees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Specialization (percent)	Coverage (percent)
INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE															
1982 Census.....	123	137	55	5.2	103.5	3.8	6.8	67.3	204.5	204.8	413.5	7.3	86.0	81	59
1981 ASM .....	(NA)	(NA)	(NA)	5.7	109.7	4.3	8.0	74.3	239.2	226.4	462.7	13.2	74.4	(NA)	(NA)
1980 ASM .....	(NA)	(NA)	(NA)	6.3	110.3	4.7	8.9	74.3	220.7	235.4	458.6	22.0	72.8	(NA)	(NA)
1979 ASM .....	(NA)	(NA)	(NA)	8.2	135.7	6.5	12.9	98.9	300.2	300.2	593.7	10.7	88.1	(NA)	(NA)
1978 ASM .....	(NA)	(NA)	(NA)	8.7	130.1	6.9	13.7	93.9	278.5	289.2	568.5	17.6	91.1	(NA)	(NA)
1977 Census.....	116	131	59	8.2	119.8	6.6	13.3	88.0	249.9	259.3	500.5	14.1	81.6	84	72
1976 ASM .....	(NA)	(NA)	(NA)	8.5	106.8	6.8	13.3	77.0	199.7	279.0	472.7	8.3	82.5	(NA)	(NA)
1975 ASM .....	(NA)	(NA)	(NA)	7.3	82.9	5.7	11.2	56.8	162.2	221.7	387.4	28.6	67.8	(NA)	(NA)
1974 ASM .....	(NA)	(NA)	(NA)	10.5	110.0	8.6	16.2	81.0	203.5	257.2	455.7	16.3	86.0	(NA)	(NA)
1973 ASM .....	(NA)	(NA)	(NA)	9.2	95.7	7.2	15.1	71.0	169.9	231.5	399.1	8.4	68.9	(NA)	(NA)
1972 Census.....	99	110	53	8.5	79.9	6.7	13.3	56.9	149.7	183.1	331.4	6.6	57.4	81	73
1971 ASM .....	(NA)	(NA)	(NA)	8.8	73.1	6.9	13.4	52.8	135.5	152.4	289.8	8.3	49.0	(NA)	(NA)
1970 ASM .....	(NA)	(NA)	(NA)	9.5	74.5	7.6	14.4	53.5	126.0	141.5	265.6	5.7	46.5	(NA)	(NA)
1969 ASM .....	(NA)	(NA)	(NA)	9.4	74.4	7.7	16.2	54.7	132.4	159.3	290.9	8.7	41.1	(NA)	(NA)
1968 ASM .....	(NA)	(NA)	(NA)	9.1	66.0	7.4	15.4	48.8	131.2	142.3	272.1	4.7	40.0	(NA)	(NA)
1967 Census.....	105	114	61	7.7	53.9	6.2	12.6	39.8	92.0	100.4	192.4	6.3	30.0	88	63
INDUSTRY 3494, VALVES AND PIPE FITTINGS															
1982 Census.....	945	1 161	726	115.2	2 334.6	75.3	144.2	1 343.5	5 219.8	3 734.8	9 039.9	363.9	2 833.3	90	90
1981 ASM .....	(NA)	(NA)	(NA)	118.5	2 228.9	80.5	159.0	1 337.7	5 338.7	3 959.7	9 139.4	354.4	2 449.6	(NA)	(NA)
1980 ASM .....	(NA)	(NA)	(NA)	117.3	2 015.8	80.6	158.6	1 237.0	4 801.8	3 541.8	8 194.9	288.1	2 220.6	(NA)	(NA)
1979 ASM .....	(NA)	(NA)	(NA)	117.3	1 832.8	81.8	161.3	1 136.2	4 431.0	3 201.7	7 403.1	262.2	2 024.6	(NA)	(NA)
1978 ASM .....	(NA)	(NA)	(NA)	113.1	1 638.1	79.6	156.1	1 029.1	3 746.2	2 715.4	6 352.7	239.8	1 685.7	(NA)	(NA)
1977 Census.....	741	902	532	108.7	1 467.3	76.0	149.6	909.8	3 385.9	2 382.5	5 662.3	201.2	1 508.2	89	88
1976 ASM .....	(NA)	(NA)	(NA)	102.7	1 282.7	70.6	140.1	789.1	2 827.6	2 006.5	4 796.1	182.1	1 362.1	(NA)	(NA)
1975 ASM .....	(NA)	(NA)	(NA)	102.4	1 181.3	69.8	137.0	721.1	2 668.2	1 969.2	4 544.9	165.4	1 316.0	(NA)	(NA)
1974 ASM .....	(NA)	(NA)	(NA)	107.6	1 137.6	75.5	160.5	715.7	2 588.7	1 879.4	4 280.3	132.7	1 212.1	(NA)	(NA)
1973 ASM .....	(NA)	(NA)	(NA)	101.3	1 000.5	70.8	143.1	626.3	2 010.6	1 475.2	3 413.7	110.0	918.3	(NA)	(NA)
1972 Census.....	645	780	464	94.3	879.9	65.6	131.3	547.2	1 751.2	1 246.8	2 956.9	79.0	782.3	90	86
1971 ASM .....	(NA)	(NA)	(NA)	94.2	830.4	65.7	130.6	514.3	1 638.7	1 201.3	2 853.1	77.8	777.4	(NA)	(NA)
1970 ASM .....	(NA)	(NA)	(NA)	97.5	812.3	67.7	135.8	504.9	1 564.0	1 154.5	2 686.5	85.5	760.7	(NA)	(NA)
1969 ASM .....	(NA)	(NA)	(NA)	96.2	750.4	68.3	139.0	469.0	1 472.4	1 064.1	2 499.2	75.9	670.0	(NA)	(NA)
1968 ASM .....	(NA)	(NA)	(NA)	95.5	707.1	67.6	136.0	439.6	1 414.8	959.3	2 350.3	76.7	617.7	(NA)	(NA)
1967 Census.....	575	666	412	95.3	683.5	67.8	139.0	429.8	1 377.3	936.8	2 274.5	100.0	599.9	86	88
INDUSTRY 3495, WIRE SPRINGS															
1982 Census.....	322	432	236	17.9	294.1	14.5	27.5	208.8	596.8	498.7	1 104.3	31.9	116.4	92	93
1981 ASM .....	(NA)	(NA)	(NA)	16.3	269.3	13.4	26.9	197.8	527.9	458.4	983.2	29.1	110.8	(NA)	(NA)
1980 ASM .....	(NA)	(NA)	(NA)	18.6	261.3	15.3	30.5	191.8	513.2	462.7	981.8	29.4	109.0	(NA)	(NA)
1979 ASM .....	(NA)	(NA)	(NA)	21.4	274.8	17.8	36.4	201.9	536.0	531.8	1 063.1	36.2	113.1	(NA)	(NA)
1978 ASM .....	(NA)	(NA)	(NA)	22.7	283.0	18.8	36.9	206.6	570.3	487.6	1 051.4	34.3	114.7	(NA)	(NA)
1977 Census.....	254	332	226	21.7	253.5	18.0	35.4	187.8	497.7	458.6	957.7	27.6	104.5	92	92
1976 ASM .....	(NA)	(NA)	(NA)	19.4	208.9	16.4	32.9	154.2	421.6	367.3	782.8	18.6	103.3	(NA)	(NA)
1975 ASM .....	(NA)	(NA)	(NA)	18.8	184.4	15.5	30.2	133.1	359.3	316.1	680.0	12.7	92.5	(NA)	(NA)
1974 ASM .....	(NA)	(NA)	(NA)	22.3	201.6	18.9	37.7	152.6	411.3	318.0	718.7	17.7	109.0	(NA)	(NA)
1973 ASM .....	(NA)	(NA)	(NA)	24.4	208.9	20.6	41.3	158.9	382.0	300.0	678.0	15.9	82.1	(NA)	(NA)
1972 Census <sup>5</sup> .....	206	284	216	23.7	193.2	19.8	40.0	144.5	340.7	273.3	611.9	12.9	66.5	88	93
INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS															
1982 Census.....	1 108	1 181	445	36.8	580.2	27.8	53.2	375.0	1 164.8	1 171.7	2 357.3	66.7	440.3	93	52
1981 ASM .....	(NA)	(NA)	(NA)	27.4	461.8	21.1	41.7	302.2	927.2	1 023.9	1 938.6	67.4	324.0	(NA)	(NA)
1980 ASM .....	(NA)	(NA)	(NA)	27.3	420.2	21.4	41.7	270.4	840.4	953.9	1 800.0	50.7	289.6	(NA)	(NA)
1979 ASM .....	(NA)	(NA)	(NA)	29.9	413.9	23.9	47.1	271.7	918.8	967.1	1 860.8	50.6	302.2	(NA)	(NA)
1978 ASM .....	(NA)	(NA)	(NA)	32.8	376.6	25.8	51.1	251.1	753.4	793.5	1 539.2	61.9	265.7	(NA)	(NA)
1977 Census.....	1 048	1 114	387	32.4	354.5	25.5	49.4	232.2	721.7	728.3	1 435.0	47.3	252.8	91	37
1976 ASM .....	(NA)	(NA)	(NA)	30.3	303.9	24.7	47.9	210.4	624.2	657.5	1 266.2	38.2	223.0	(NA)	(NA)
1975 ASM .....	(NA)	(NA)	(NA)	28.0	270.3	22.5	43.8	185.0	565.0	575.6	1 139.1	27.2	221.4	(NA)	(NA)
1974 ASM .....	(NA)	(NA)	(NA)	31.6	282.5	25.7	50.1	198.8	578.9	587.1	1 137.9	44.4	224.1	(NA)	(NA)
1973 ASM .....	(NA)	(NA)	(NA)	32.2	259.1	25.9	50.4	178.8	532.9	467.6	994.5	29.9	157.8	(NA)	(NA)
1972 Census <sup>5</sup> .....	1 157	1 211	412	33.2	261.4	26.5	51.7	177.3	504.4	462.7	959.7	28.9	158.7	93	39
INDUSTRY 3497, METAL FOIL AND LEAF															
1982 Census.....	79	96	67	10.8	241.6	8.0	15.9	171.3	660.6	1 156.7	1 831.3	40.1	284.0	81	82
1981 ASM .....	(NA)	(NA)	(NA)	8.4	171.6	6.1	12.5	118.1	425.7	837.7	1 263.6	37.5	172.7	(NA)	(NA)
1980 ASM .....	(NA)	(NA)	(NA)	9.0	172.8	6.6	13.0	117.0	400.7	754.3	1 146.4	35.2	175.0	(NA)	(NA)
1979 ASM .....	(NA)	(NA)	(NA)	8.9	154.3	6.6	13.2	106.8	362.4	690.3	1 037.2	24.0	159.4	(NA)	(NA)
1978 ASM .....	(NA)	(NA)	(NA)	9.5	148.0	7.0	13.9	103.2	342.1	710.8	1 047.8	38.9	159.4	(NA)	(NA)
1977 Census.....	63	77	52	9.4	125.8	6.6	13.0	87.1	298.0	607.2	895.1	16.1	141.1	80	63
1976 ASM .....	(NA)	(NA)	(NA)	6.0	75.6	4.3	8.7	49.7	177.7	303.8	477.4	11.2	74.8	(NA)	(NA)
1975 ASM .....	(NA)	(NA)	(NA)	5.5	65.7	4.1	8.1	41.9	136.9	248.4	389.2	11.7	64.6	(NA)	(NA)
1974 ASM .....	(NA)	(NA)	(NA)	5.9	64.2	4.3	9.1	42.5	169.6	261.5	420.5	17.0	78.1	(NA)	(NA)
1973 ASM .....	(NA)	(NA)	(NA)	5.8	57.6	4.3	8.7	38.5	139.2	191.7	332.5	11.3	49.6	(NA)	(NA)
1972 Census.....	54	63	40	5.4	51.9	3.9	8.1	33.2	126.5	157.6	282.0	8.2	43.8	80	52
1971 ASM .....	(NA)	(NA)	(NA)	5.3	49.4	3.7	7.6	29.5	102.8	161.7	266.9	17.3	40.0	(NA)	(NA)
1970 ASM .....	(NA)	(NA)	(NA)	6.0	53.5	4.3	8.9	32.9	113.2	165.0	278.5	9.7	45.9	(NA)	(NA)
1969 ASM .....	(NA)	(NA)	(NA)	6.7	56.0	5.0	10.4	36.6	122.1	177.4	294.7	15.5	50.9	(NA)	(NA)
1968 ASM .....	(NA)	(NA)	(NA)	6.7	51.3	5.0	10.2	33.2	114.7	165.5	277.3	12.2	42.9	(NA)	(NA)

See footnotes at end of table.



**Table 1a. Historical Statistics for the Industry: 1982 and Earlier Years—Con.**

[Excludes data for auxiliaries. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year <sup>1</sup>	Com- panies <sup>2</sup> (no.)	All establishments <sup>3</sup>		All employees		Production workers			Value added by manufac- ture <sup>4</sup> (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expend- itures (million dollars)	End-of- year inventories <sup>4</sup> (million dollars)	Ratios	
		Total (no.)	With 20 employ- ees or more (no.)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						Spe- cial- ization (per- cent)	Cover- age (per- cent)
	INDUSTRY 3498, FABRICATED PIPE AND FITTINGS														
1982 Census-----	704	778	347	32.7	651.7	23.8	46.4	425.0	1 440.4	1 674.3	3 115.8	137.7	897.5	97	94
1981 ASM-----	(NA)	(NA)	(NA)	32.0	589.7	24.5	47.0	405.8	1 442.1	1 567.8	2 934.0	135.3	677.4	(NA)	(NA)
1980 ASM-----	(NA)	(NA)	(NA)	32.0	531.9	24.4	46.6	364.2	1 164.4	1 330.4	2 487.0	80.6	520.1	(NA)	(NA)
1979 ASM-----	(NA)	(NA)	(NA)	32.9	488.9	25.9	50.2	345.6	1 145.3	1 256.7	2 408.3	67.0	471.0	(NA)	(NA)
1978 ASM-----	(NA)	(NA)	(NA)	30.2	433.8	23.2	44.0	295.9	1 006.0	1 217.3	2 183.4	58.1	480.0	(NA)	(NA)
1977 Census-----	513	579	278	28.2	390.0	21.4	40.6	265.4	887.2	1 015.4	1 872.7	51.0	418.4	94	93
1976 ASM-----	(NA)	(NA)	(NA)	25.5	354.1	19.8	38.1	260.2	726.8	896.2	1 646.7	57.5	335.1	(NA)	(NA)
1975 ASM-----	(NA)	(NA)	(NA)	20.7	251.6	15.6	30.3	170.1	637.0	710.7	1 307.2	49.1	357.7	(NA)	(NA)
1974 ASM-----	(NA)	(NA)	(NA)	20.9	225.8	15.8	31.2	149.1	603.4	603.3	1 158.8	31.5	269.8	(NA)	(NA)
1973 ASM-----	(NA)	(NA)	(NA)	19.4	184.8	14.6	28.5	126.1	413.8	443.6	846.4	19.9	181.7	(NA)	(NA)
1972 Census-----	373	423	202	17.5	164.7	13.2	25.9	112.4	363.1	352.2	704.4	14.7	157.5	94	90
1971 ASM-----	(NA)	(NA)	(NA)	16.5	145.2	12.6	24.6	97.7	297.1	301.3	594.7	12.6	136.9	(NA)	(NA)
1970 ASM-----	(NA)	(NA)	(NA)	16.2	138.7	12.4	25.2	95.1	270.9	272.0	540.3	13.5	130.0	(NA)	(NA)
1969 ASM-----	(NA)	(NA)	(NA)	16.5	117.7	12.4	26.3	78.8	251.3	336.7	588.9	20.8	138.1	(NA)	(NA)
1968 ASM-----	(NA)	(NA)	(NA)	18.4	134.9	13.9	28.6	94.6	255.9	317.5	569.4	17.7	125.5	(NA)	(NA)
1967 Census-----	356	393	197	18.2	129.1	13.4	27.4	86.6	238.5	274.4	508.1	14.4	100.7	95	90
	INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.														
1982 Census-----	2 910	2 982	811	65.0	1 105.8	48.8	94.2	715.2	2 304.1	2 039.8	4 406.0	114.1	709.1	92	87
1981 ASM-----	(NA)	(NA)	(NA)	75.2	1 223.8	56.9	114.7	803.8	2 674.1	2 569.9	5 249.4	145.1	776.4	(NA)	(NA)
1980 ASM-----	(NA)	(NA)	(NA)	77.0	1 139.7	58.2	116.3	749.5	2 578.8	2 454.3	5 043.3	174.4	768.4	(NA)	(NA)
1979 ASM-----	(NA)	(NA)	(NA)	80.5	1 095.0	61.8	121.1	713.8	2 415.8	2 380.1	4 724.7	156.9	778.4	(NA)	(NA)
1978 ASM-----	(NA)	(NA)	(NA)	71.8	932.7	54.1	107.4	594.5	2 084.5	1 953.0	3 974.5	107.7	660.8	(NA)	(NA)
1977 Census-----	3 142	3 238	794	70.8	844.7	54.1	104.8	547.8	1 814.5	1 643.5	3 429.2	94.8	574.3	89	83
1976 ASM-----	(NA)	(NA)	(NA)	66.7	765.0	50.5	94.6	495.4	1 691.4	1 475.8	3 170.2	92.7	514.9	(NA)	(NA)
1975 ASM-----	(NA)	(NA)	(NA)	63.2	668.6	47.5	88.3	437.4	1 468.8	1 381.5	2 863.0	64.1	502.4	(NA)	(NA)
1974 ASM-----	(NA)	(NA)	(NA)	69.3	644.4	51.6	97.6	433.2	1 450.9	1 280.0	2 694.5	85.5	460.5	(NA)	(NA)
1973 ASM-----	(NA)	(NA)	(NA)	64.6	565.0	49.6	96.3	370.1	1 157.9	991.2	2 128.0	38.9	346.9	(NA)	(NA)
1972 Census <sup>5</sup> -----	2 254	2 343	653	61.8	510.7	47.2	92.2	337.7	1 047.4	896.9	1 938.6	61.8	301.1	89	74

<sup>1</sup>In annual survey of manufactures (ASM) years, data are estimates based on a representative sample of establishments canvassed annually and may differ from results of a complete canvass of all establishments. ASM publication shows percentage standard errors. Unless otherwise noted, for data prior to 1967, see 1967 Census of Manufactures, vol. II, table 1 of the Industry chapter.

<sup>2</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>3</sup>Includes establishments with payroll at any time during year.

<sup>4</sup>Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for all sector reports. Up to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown above and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown below:

Industries	End-of-1981 inventories (million dollars)	End-of-1982 inventories (million dollars)	1982 value added by manufacture (million dollars)
Industry 3493, Steel springs, except wire.....	83.4	70.6	205.9
Industry 3494, Valves and pipe fittings.....	2 606.5	2 464.6	5 203.4
Industry 3495, Wire springs.....	124.0	109.9	597.7
Industry 3496, Miscellaneous fabricated wire products.....	426.2	388.5	1 169.9
Industry 3497, Metal foil and leaf.....	255.7	240.4	665.7
Industry 3498, Fabricated pipe and fittings.....	852.3	806.9	1 446.8
Industry 3499, Fabricated metal products, n.e.c. ....	750.4	661.9	2 315.5

See Inventories in appendixes for explanation of the difference between end-of-1981 inventory figure shown in table and corresponding figure shown in footnote.

<sup>5</sup>Industry was defined or redefined for 1972 Census of Manufactures, so data are available only for the years shown.

**Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
<b>INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE</b>									
1982 Census.....	19 904	73	1 789	9.90	50	75	39 327	51	30.07
1981 ASM.....	19 246	75	1 860	9.29	49	73	41 965	46	29.90
1980 ASM.....	17 508	75	1 894	8.35	51	75	35 032	50	24.80
1979 ASM.....	16 549	79	1 985	7.67	51	73	36 610	45	23.27
1978 ASM.....	14 954	79	1 986	6.85	51	74	32 011	47	20.33

See footnotes at end of table.



**Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years—Con.**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
<b>INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE—Con.</b>									
1977 Census	14 610	80	2 015	6.62	52	76	30 476	48	18.79
1976 ASM	12 565	80	1 956	5.79	59	82	23 494	53	15.02
1975 ASM	11 356	78	1 965	5.07	57	79	22 219	51	14.48
1974 ASM	10 476	82	1 884	5.00	56	81	19 381	54	12.56
1973 ASM	10 402	78	2 097	4.70	58	82	18 467	56	11.25
1972 Census	9 400	79	1 985	4.28	55	79	17 612	53	11.26
1971 ASM	8 307	78	1 942	3.94	53	78	15 398	54	10.11
1970 ASM	7 842	80	1 895	3.72	53	81	13 263	59	8.75
1969 ASM	7 915	82	2 104	3.38	55	80	14 085	56	8.17
1968 ASM	7 253	81	2 081	3.17	52	77	14 418	50	8.52
1967 Census	7 000	81	2 032	3.16	52	80	11 948	59	7.30
<b>INDUSTRY 3494, VALVES AND PIPE FITTINGS</b>									
1982 Census	20 266	65	1 915	9.32	41	67	45 311	45	36.20
1981 ASM	18 809	68	1 975	8.41	43	68	45 052	42	33.58
1980 ASM	17 185	69	1 968	7.80	43	68	40 936	42	30.28
1979 ASM	15 625	70	1 972	7.04	43	68	37 775	41	27.47
1978 ASM	14 484	70	1 961	6.59	43	69	33 123	44	24.00
1977 Census	13 499	70	1 968	6.08	42	68	31 149	43	22.63
1976 ASM	12 490	69	1 984	5.63	42	69	27 533	45	20.18
1975 ASM	11 536	68	1 963	5.26	43	69	26 057	44	19.48
1974 ASM	10 572	70	2 126	4.46	44	70	24 059	44	16.13
1973 ASM	9 877	70	2 021	4.38	43	73	19 848	50	14.05
1972 Census	9 331	70	2 002	4.17	42	72	18 571	50	13.34
1971 ASM	8 815	70	1 988	3.94	42	71	17 396	51	12.55
1970 ASM	8 331	69	2 006	3.72	43	73	16 041	52	11.52
1969 ASM	7 800	71	2 035	3.37	43	73	15 306	51	10.59
1968 ASM	7 404	71	2 012	3.23	41	71	14 815	50	10.40
1967 Census	7 172	71	2 050	3.09	41	71	14 452	50	9.91
<b>INDUSTRY 3495, WIRE SPRINGS</b>									
1982 Census	16 430	81	1 897	7.59	45	72	33 341	49	21.70
1981 ASM	16 521	82	2 007	7.35	47	74	32 387	51	19.62
1980 ASM	14 048	82	1 993	6.29	47	74	27 591	51	16.83
1979 ASM	12 841	83	2 045	5.55	50	76	25 047	51	14.73
1978 ASM	12 467	83	1 963	5.60	46	73	25 123	50	15.46
1977 Census	11 682	83	1 967	5.31	48	74	22 935	51	14.06
1976 ASM	10 768	85	2 006	4.69	47	74	21 732	50	12.81
1975 ASM	9 809	82	1 948	4.41	46	74	19 112	51	11.90
1974 ASM	9 040	85	1 995	4.05	44	72	18 444	49	10.91
1973 ASM	8 561	84	2 005	3.85	44	75	15 656	55	9.25
1972 Census	8 152	84	2 020	3.61	45	76	14 376	57	8.52
<b>INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS</b>									
1982 Census	15 766	76	1 914	7.05	50	74	31 652	50	21.89
1981 ASM	16 854	77	1 976	7.25	53	77	33 839	50	22.24
1980 ASM	15 392	78	1 949	6.48	53	76	30 784	50	20.15
1979 ASM	13 843	80	1 971	5.77	52	74	30 729	45	19.51
1978 ASM	11 482	79	1 981	4.91	52	76	22 970	50	14.74
1977 Census	10 941	79	1 937	4.70	51	75	22 275	49	14.61
1976 ASM	10 030	82	1 939	4.39	52	76	20 601	49	13.03
1975 ASM	9 654	80	1 947	4.22	51	74	20 179	48	12.90
1974 ASM	8 940	81	1 949	3.97	52	76	18 320	49	11.55
1973 ASM	8 047	80	1 946	3.55	47	73	16 550	49	10.57
1972 Census	7 873	80	1 951	3.43	48	75	15 193	52	9.76
<b>INDUSTRY 3497, METAL FOIL AND LEAF</b>									
1982 Census	22 370	74	1 987	10.77	63	76	61 167	37	41.55
1981 ASM	20 429	73	2 049	9.45	66	80	50 679	40	34.06
1980 ASM	19 200	73	1 970	9.00	66	81	44 522	43	30.82
1979 ASM	17 337	74	2 000	8.09	67	81	40 719	43	27.45
1978 ASM	15 579	74	1 986	7.42	68	82	36 011	43	24.61
1977 Census	13 383	70	1 970	6.70	68	82	31 702	42	22.92
1976 ASM	12 600	72	2 023	5.71	64	79	29 617	43	20.43
1975 ASM	11 945	75	1 976	5.17	64	81	24 891	48	16.90
1974 ASM	10 881	73	2 116	4.67	62	77	28 746	38	18.64
1973 ASM	9 931	74	2 023	4.43	58	75	24 000	41	16.00
1972 Census	9 611	72	2 077	4.10	56	74	23 426	41	15.62
1971 ASM	9 321	70	2 054	3.88	61	79	19 396	48	13.53
1970 ASM	8 917	72	2 070	3.70	59	78	18 867	47	12.72
1969 ASM	8 358	75	2 080	3.52	60	79	18 224	46	11.74
1968 ASM	7 657	75	2 040	3.25	60	78	17 119	45	11.25
1967 Census	7 379	73	2 146	3.02	60	79	15 894	46	10.18
<b>INDUSTRY 3498, FABRICATED PIPE AND FITTINGS</b>									
1982 Census	19 930	73	1 950	9.16	54	75	44 049	45	31.04
1981 ASM	18 428	77	1 918	8.63	53	74	45 066	41	30.68
1980 ASM	16 622	76	1 910	7.82	53	75	36 387	46	24.99
1979 ASM	14 860	79	1 938	6.88	52	72	34 812	43	22.81
1978 ASM	14 364	77	1 897	6.72	56	76	33 311	43	22.86

See footnotes at end of table.



**Table 1b. Selected Operating Ratios for the Industry: 1982 and Earlier Years—Con.**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Year	Payroll per employee (dollars)	Production workers as percent of total employment (percent)	Annual hours of production workers (number)	Average hourly earnings of production workers (dollars)	Cost of materials as percent of value of shipments (percent)	Cost of materials and payroll as percent of value of shipments (percent)	Value added per employee (dollars)	Payroll as percent of value added (percent)	Value added per production worker hour (dollars)
<b>INDUSTRY 3498, FABRICATED PIPE AND FITTINGS—Con.</b>									
1977 Census	13 830	76	1 897	6.54	54	75	31 461	44	21.85
1976 ASM	13 886	78	1 924	6.83	54	76	28 502	49	19.08
1975 ASM	12 155	75	1 942	5.61	54	74	30 773	39	21.02
1974 ASM	10 804	76	1 975	4.78	52	72	28 871	37	19.34
1973 ASM	9 526	75	1 952	4.42	52	74	21 330	45	14.52
1972 Census	9 411	75	1 962	4.34	50	73	20 749	45	14.02
1971 ASM	8 800	76	1 952	3.97	51	75	18 006	49	12.08
1970 ASM	8 562	77	2 032	3.77	50	76	16 722	51	10.75
1969 ASM	7 133	75	2 121	3.00	57	77	15 230	47	9.56
1968 ASM	7 332	76	2 058	3.31	56	79	13 908	53	8.95
1967 Census	7 093	74	2 045	3.16	54	79	13 104	54	8.70
<b>INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.</b>									
1982 Census	17 012	75	1 930	7.59	46	71	35 448	48	24.46
1981 ASM	16 274	76	2 016	7.01	49	72	35 560	46	23.31
1980 ASM	14 801	76	1 998	6.44	49	71	33 491	44	22.17
1979 ASM	13 602	77	1 960	5.89	50	74	30 010	45	19.95
1978 ASM	12 990	75	1 985	5.54	49	73	29 032	45	19.41
1977 Census	11 931	76	1 937	5.23	48	73	25 629	47	17.31
1976 ASM	11 469	76	1 873	5.24	47	71	25 358	45	17.88
1975 ASM	10 579	75	1 859	4.95	48	72	23 241	46	16.63
1974 ASM	9 299	74	1 891	4.44	48	71	20 937	44	14.87
1973 ASM	8 746	77	1 942	3.84	47	73	17 924	49	12.02
1972 Census	8 264	76	1 953	3.66	46	73	16 948	49	11.36

Note: For qualifications of data, see footnotes on table 1a.

**Table 2. Industry Statistics for Selected States: 1982 and 1977**

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1982											1977		
	E <sup>1</sup>	All establishments <sup>2</sup>		All employees		Production workers			Value added by manufacture <sup>4</sup> (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees <sup>3</sup> (1,000)	Value added by manufacture (million dollars)
		Total (no.)	With 20 employees or more (no.)	Number <sup>3</sup> (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						
<b>INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE</b>														
United States -----	-	137	55	5.2	103.5	3.8	6.8	67.3	204.5	204.8	413.5	7.3	8.2	249.9
Arkansas -----	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
California -----	-	25	7	.5	7.4	.3	.6	4.8	12.1	14.3	26.8	.4	.6	15.8
Connecticut -----	-	5	4	.5	9.1	.4	.6	5.5	18.5	7.8	26.2	(D)	CC	(D)
Illinois -----	-	14	7	.9	19.0	.7	1.3	12.8	35.7	56.8	95.0	1.1	1.0	28.1
Indiana -----	-	4	4	.7	13.9	.5	.9	10.0	27.5	23.1	51.0	(D)	1.7	48.7
Michigan -----	-	14	5	.2	4.5	.1	.3	2.4	11.5	14.5	25.4	.5	CC	(D)
Ohio -----	-	11	4	.4	6.4	.2	.5	4.0	9.9	10.9	20.8	.6	.5	14.2
Pennsylvania -----	-	17	13	1.2	27.5	.9	1.6	18.4	61.3	52.0	113.6	(D)	1.8	71.4
Texas -----	-	7	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	8.4
<b>INDUSTRY 3494, VALVES AND PIPE FITTINGS</b>														
United States -----	-	1 161	726	115.2	2 334.6	75.3	144.2	1 343.5	5 219.8	3 734.8	9 039.9	363.9	108.7	3 385.9
Alabama -----	-	12	8	4.1	74.8	2.9	5.3	47.1	125.8	99.3	236.4	10.1	4.2	114.8
Arizona -----	-	9	4	.2	4.9	.2	.4	3.3	11.8	4.3	16.1	(D)	(NA)	(NA)
Arkansas -----	-	10	10	3.2	53.2	2.6	5.3	38.7	134.8	87.7	226.0	10.5	3.3	82.5
California -----	-	153	90	9.7	209.9	6.0	12.1	115.2	481.1	260.2	737.9	24.2	8.0	277.1
Colorado -----	-	6	4	1.2	22.7	.8	1.4	13.6	44.8	30.8	77.8	2.6	1.3	37.9
Connecticut -----	-	23	16	2.2	42.9	1.4	2.8	24.8	108.2	64.8	176.2	4.9	2.0	63.6
Florida -----	E1	24	13	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	7.9
Georgia -----	-	7	5	.8	14.0	.6	1.2	8.9	38.1	37.7	76.0	3.0	.8	25.0
Illinois -----	-	76	49	6.9	144.4	4.6	8.7	85.7	300.0	215.1	532.8	19.6	10.8	285.6
Indiana -----	-	31	20	2.9	54.5	2.2	4.0	36.2	105.9	109.4	221.6	7.8	3.8	111.9
Iowa -----	-	12	8	4.4	104.4	2.3	4.2	48.9	243.6	122.5	354.9	11.7	4.5	167.2
Kansas -----	-	8	4	.3	4.9	.2	.4	3.3	13.9	9.3	23.1	.9	.2	4.4
Kentucky -----	-	6	6	2.7	53.0	1.9	3.7	34.8	123.3	71.0	192.9	8.9	3.0	80.2
Louisiana -----	-	15	11	2.1	42.7	1.3	2.8	22.5	89.3	61.0	154.0	7.5	1.5	37.2
Maine -----	-	5	3	.3	5.3	.2	.4	3.2	13.9	6.9	20.5	2.2	.4	6.0
Maryland -----	-	6	6	.6	9.4	.4	.8	5.6	28.1	20.8	51.4	1.2	(NA)	(NA)
Massachusetts -----	-	39	21	4.5	103.7	2.5	4.8	54.5	203.6	110.6	317.0	8.4	5.3	162.4
Michigan -----	-	68	45	6.0	125.1	4.0	7.4	69.3	277.2	161.2	440.0	19.7	5.1	160.6
Minnesota -----	-	18	8	1.4	26.5	.7	1.2	11.4	53.6	29.1	85.4	5.7	1.4	37.2
Mississippi -----	-	5	4	.3	5.3	.2	.5	3.6	22.9	17.4	39.5	1.4	AA	(D)
Missouri -----	-	15	13	1.7	33.3	1.2	2.3	20.4	99.0	69.1	168.3	2.6	1.9	66.2
Nebraska -----	-	6	5	.8	15.7	.5	.9	8.7	33.4	30.7	66.4	3.3	CC	(D)
Nevada -----	-	2	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
New Hampshire -----	-	6	5	1.0	14.7	.8	1.7	10.2	34.5	32.0	67.2	.5	.5	6.3
New Jersey -----	-	50	32	4.8	103.9	2.8	5.3	50.6	251.4	137.7	391.9	7.5	4.8	171.6

See footnotes at end of table.



**Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.**

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	E¹	1982											1977	
		All establishments²		All employees		Production workers			Value added by manufacture⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees³ (1,000)	Value added by manufacture (million dollars)
		Total (no.)	With 20 employees or more (no.)	Number³ (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						
<b>INDUSTRY 3494, VALVES AND PIPE FITTINGS—Con.</b>														
New York .....	-	55	27	4.1	78.0	3.0	5.8	50.0	190.7	104.5	289.5	7.7	3.2	109.1
North Carolina .....	-	20	14	2.0	33.2	1.3	2.4	18.5	81.2	54.5	133.1	11.7	1.9	53.1
Ohio .....	-	106	71	12.4	252.5	8.3	15.8	154.0	548.5	541.7	1 117.6	31.7	11.9	409.1
Oklahoma .....	-	38	23	3.6	79.2	2.0	3.9	41.6	176.7	132.3	310.1	16.6	2.8	93.0
Oregon .....	-	11	7	.5	9.0	.3	.5	4.5	16.4	8.0	22.9	2.2	.4	9.0
Pennsylvania .....	-	83	56	9.5	193.5	6.0	11.5	107.7	402.7	251.2	659.5	26.6	9.1	264.8
Rhode Island .....	-	13	9	1.2	24.1	.7	1.2	10.1	52.6	35.3	82.3	2.1	CC	(D)
South Carolina .....	-	9	7	.8	11.8	.6	1.1	7.8	28.8	41.2	69.3	(D)	BB	(D)
Tennessee .....	-	14	9	2.0	32.1	1.4	2.5	21.4	89.8	81.0	183.4	7.3	1.5	63.4
Texas .....	-	150	91	12.1	257.9	7.9	15.6	150.0	606.5	540.5	1 147.3	80.1	8.6	278.1
Utah .....	-	4	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Vermont .....	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Virginia .....	-	7	3	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Wisconsin .....	-	26	14	2.7	54.2	1.8	3.5	32.5	91.0	74.0	167.7	3.5	3.0	94.6
<b>INDUSTRY 3495, WIRE SPRINGS</b>														
United States .....	E1	432	236	17.9	294.1	14.5	27.5	208.8	596.8	498.7	1 104.3	31.9	21.7	497.7
Arkansas .....	E1	4	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
California .....	-	53	28	1.6	28.3	1.3	2.4	19.0	59.1	38.5	98.0	(D)	1.5	35.2
Connecticut .....	E1	38	22	1.2	19.4	1.0	1.9	13.8	32.1	18.8	50.9	1.1	1.5	27.2
Florida .....	-	10	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Georgia .....	-	6	4	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Illinois .....	E2	57	37	2.5	43.4	2.1	4.0	31.5	86.8	60.7	148.4	3.7	3.0	68.4
Indiana .....	-	16	11	.8	14.1	.7	1.2	10.1	28.8	25.9	54.6	1.3	1.1	27.1
Iowa .....	-	4	4	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Kentucky .....	-	5	4	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2.2	55.7
Massachusetts .....	-	15	9	.5	8.8	.4	.7	5.7	16.8	18.2	35.4	1.0	.5	10.4
Michigan .....	-	34	23	2.0	40.0	1.6	2.9	28.7	70.5	56.4	128.6	3.6	4.7	127.9
Mississippi .....	-	4	3	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	3.3
Missouri .....	-	6	4	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Nebraska .....	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
New Jersey .....	E1	10	5	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.3	7.0
New York .....	E1	19	8	.7	9.9	.5	1.1	7.2	20.5	12.8	33.7	1.3	.6	14.8
North Carolina .....	-	17	10	.7	7.5	.6	1.0	5.8	18.8	22.0	41.1	1.1	1.0	15.7
Ohio .....	E1	38	16	1.2	18.9	1.0	2.0	13.5	37.5	31.4	69.6	1.2	1.2	27.7
Pennsylvania .....	-	17	11	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Tennessee .....	-	10	4	.3	4.2	.2	.4	2.5	10.3	14.8	26.0	1.6	AA	(D)
Texas .....	-	20	10	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Wisconsin .....	-	6	4	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.2	5.3
<b>INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS</b>														
United States .....	-	1 181	445	36.8	580.2	27.8	53.2	375.0	1 164.8	1 171.7	2 357.3	66.7	32.4	721.7
Alabama .....	-	12	5	.3	5.0	.3	.5	3.8	13.4	33.5	49.8	.5	.8	15.7
Arkansas .....	-	6	5	.5	6.9	.5	1.0	6.0	13.5	16.0	30.0	(D)	.4	5.5
California .....	-	146	47	3.3	50.8	2.6	5.0	34.5	101.7	100.8	203.7	4.2	2.7	73.4
Colorado .....	-	13	3	.2	3.7	.2	.3	2.8	8.8	7.3	15.8	1.3	.2	4.1
Connecticut .....	-	35	18	1.3	20.4	.9	1.8	12.6	42.7	39.6	83.1	1.6	.8	14.6
Florida .....	-	32	10	.7	9.5	.5	1.0	5.6	26.4	24.9	52.9	1.1	.3	5.2
Georgia .....	-	18	6	.3	3.6	.2	.4	2.4	9.3	13.8	23.3	.4	(NA)	(NA)
Illinois .....	-	97	44	3.8	63.8	2.8	5.0	40.6	117.9	108.1	224.8	5.0	2.6	58.2
Indiana .....	-	38	14	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Iowa .....	-	13	7	.6	9.3	.4	.8	6.3	19.3	13.0	32.8	1.3	.4	9.7
Kentucky .....	-	14	8	.4	5.8	.3	.6	4.0	10.8	29.4	40.4	1.4	BB	(D)
Maryland .....	-	11	9	1.0	16.3	.7	1.3	10.1	26.9	33.6	59.5	2.4	.6	13.8
Massachusetts .....	E1	42	15	.8	13.4	.6	1.3	8.3	27.5	24.5	52.2	1.6	.7	12.4
Michigan .....	E1	47	14	1.5	24.1	1.0	2.0	15.3	42.8	41.5	86.0	.6	2.2	46.2
Minnesota .....	-	19	9	.9	17.1	.5	1.0	8.1	28.2	17.4	46.1	1.5	.2	4.0
Missouri .....	-	22	12	1.6	24.1	1.1	2.2	14.3	44.0	43.8	90.0	2.4	.9	17.2
New Hampshire .....	-	8	3	.3	4.0	.2	.4	2.8	8.4	6.1	13.6	1.0	(NA)	(NA)
New Jersey .....	-	75	26	2.1	32.9	1.5	2.9	20.2	70.3	55.0	125.9	3.5	2.0	51.2
New York .....	-	114	30	2.5	36.8	1.9	3.6	24.7	72.3	62.4	137.9	3.9	3.1	67.5
North Carolina .....	-	18	9	.5	7.2	.4	.8	4.4	18.0	31.2	49.5	(D)	.6	23.6
Ohio .....	-	66	28	1.9	30.3	1.4	2.7	18.4	67.4	46.7	112.6	3.1	2.0	41.1
Oklahoma .....	-	11	4	.6	8.9	.5	.9	6.4	14.0	29.5	44.7	1.6	.6	10.8
Oregon .....	-	15	4	.4	8.2	.3	.5	5.1	12.5	9.7	23.0	1.3	.3	8.5
Pennsylvania .....	-	76	31	3.1	54.3	2.2	4.3	31.8	114.7	93.1	209.3	7.2	3.1	80.0
Rhode Island .....	-	16	7	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
South Carolina .....	-	13	4	.3	5.4	.3	.5	3.5	17.6	12.5	29.9	(D)	.6	15.0
Tennessee .....	-	19	13	1.4	19.6	1.2	2.2	13.2	49.6	39.5	89.6	2.6	1.3	26.5
Texas .....	E1	67	26	1.8	26.8	1.4	2.9	18.0	52.2	73.9	133.4	4.8	1.2	25.6
Washington .....	-	22	7	.4	6.9	.3	.6	3.9	17.5	15.8	33.4	.8	.3	7.6
West Virginia .....	-	3	2	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Wisconsin .....	-	30	13	1.0	15.2	.7	1.4	9.0	29.5	36.1	65.1	1.7	.7	12.9

See footnotes at end of table.



Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1982											1977		
	E¹	All establishments²		All employees		Production workers			Value added by manufacture⁴ (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees³ (1,000)	Value added by manufacture (million dollars)
		Total (no.)	With 20 employees or more (no.)	Number³ (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						
<b>INDUSTRY 3497, METAL FOIL AND LEAF</b>														
United States .....	-	96	67	10.8	241.6	8.0	15.9	171.3	660.6	1 156.7	1 831.3	40.1	9.4	298.0
Arkansas .....	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
California .....	-	15	6	.5	10.1	.4	.7	6.7	25.3	34.6	59.8	.5	.4	17.7
Connecticut .....	-	5	3	.3	5.5	.2	.4	2.5	7.4	15.4	22.9	1.9	AA	(D)
Illinois .....	-	6	5	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.6	17.7
Indiana .....	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Kentucky .....	-	6	5	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
Minnesota .....	-	1	1	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	AA	(D)
Missouri .....	-	2	2	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	BB	(D)
New Jersey .....	-	20	15	1.6	33.9	1.2	2.3	20.7	72.1	121.8	193.7	6.3	1.1	42.7
New York .....	-	9	6	.5	9.4	.3	.6	5.6	21.2	26.0	47.1	1.7	.3	6.4
North Carolina .....	-	5	3	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	EE	(D)
Ohio .....	-	8	8	1.5	33.0	1.1	2.3	23.8	97.6	119.6	218.1	3.9	1.9	71.1
Pennsylvania .....	-	3	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Virginia .....	-	4	4	EE	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
<b>INDUSTRY 3498, FABRICATED PIPE AND FITTINGS</b>														
United States .....	-	778	347	32.7	651.7	23.8	46.4	425.0	1 440.4	1 674.3	3 115.8	137.7	28.2	887.2
Alabama .....	-	8	3	.2	2.9	.2	.3	1.8	9.3	7.4	17.1	.3	(NA)	(NA)
Arkansas .....	-	12	7	.4	6.7	.3	.6	4.8	11.5	16.4	28.5	(D)	(NA)	(NA)
California .....	-	76	31	2.0	40.4	1.4	2.9	25.2	80.9	87.5	169.8	(D)	2.1	67.1
Colorado .....	-	11	2	.3	6.9	.2	.4	4.6	13.0	15.9	29.5	.5	.2	7.3
Delaware .....	-	4	3	.4	5.5	.3	.5	3.5	11.7	12.1	24.3	.5	AA	(D)
Florida .....	E1	17	8	.6	11.3	.5	.9	8.1	22.1	49.8	66.7	1.0	.3	7.7
Georgia .....	-	7	4	.2	3.1	.1	.3	2.1	8.1	14.1	22.4	(D)	.2	4.7
Illinois .....	-	42	23	2.1	38.0	1.7	3.3	27.6	74.7	98.0	174.2	7.2	1.7	45.8
Indiana .....	E1	23	13	1.5	25.3	1.2	1.9	17.3	48.5	53.9	103.5	1.7	.5	7.7
Kansas .....	-	13	4	.4	7.7	.2	.5	4.8	16.1	15.2	33.0	(D)	(NA)	(NA)
Kentucky .....	-	4	4	.8	16.2	.6	1.2	11.8	18.9	33.4	53.7	2.0	.9	21.2
Louisiana .....	E1	22	10	1.1	20.2	.7	1.4	14.0	35.7	47.3	81.5	3.7	.3	5.7
Michigan .....	-	74	33	2.3	38.5	1.8	3.4	25.0	82.0	138.6	226.8	5.6	2.8	106.1
Minnesota .....	-	13	1	BB	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
Missouri .....	-	11	6	.4	5.8	.3	.6	4.1	8.4	13.4	23.6	1.9	AA	(D)
New Hampshire .....	-	3	3	AA	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(NA)	(NA)
New Jersey .....	-	32	13	1.0	18.1	.6	1.2	10.6	35.7	46.4	81.9	3.1	1.8	45.9
New York .....	E1	27	9	.8	14.1	.6	1.1	8.3	28.4	36.3	65.1	2.1	1.2	27.2
North Carolina .....	-	10	4	.9	20.4	.7	1.0	12.6	49.1	69.5	119.0	1.4	EE	(D)
Ohio .....	-	42	16	1.4	28.9	1.0	2.0	18.4	60.8	83.5	149.1	5.3	1.8	76.0
Oklahoma .....	-	29	10	.7	16.4	.5	1.1	11.5	25.5	39.2	64.6	2.2	.4	14.3
Oregon .....	-	10	4	.4	9.7	.3	.5	5.9	23.1	23.3	45.6	1.9	.5	13.9
Pennsylvania .....	-	53	34	2.6	50.8	2.0	3.9	36.4	136.0	98.1	241.5	12.1	3.2	107.5
South Carolina .....	-	5	3	.6	12.8	.5	1.2	10.7	35.6	19.6	56.3	(D)	.6	21.7
Tennessee .....	E1	14	7	.4	7.5	.3	.5	4.0	9.5	13.6	25.0	5.5	.6	14.7
Texas .....	-	116	74	9.0	199.2	6.3	12.9	123.2	503.0	526.7	1 003.6	59.6	4.9	174.8
Utah .....	-	8	4	.5	10.4	.3	.6	6.3	25.2	29.4	52.2	2.4	.3	13.1
West Virginia .....	-	7	2	.3	8.0	.2	.4	5.4	18.0	23.9	46.5	(D)	CC	(D)
Wisconsin .....	-	17	4	.2	2.4	.1	.2	1.4	4.0	4.1	8.1	(D)	.4	10.7
<b>INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.</b>														
United States .....	-	2 982	811	65.0	1 105.8	48.8	94.2	715.2	2 304.1	2 039.8	4 406.0	114.1	70.8	1 814.5
Alabama .....	-	50	15	.8	11.8	.6	1.1	7.0	26.2	44.3	71.6	1.7	1.3	34.9
Arizona .....	E3	33	6	.4	5.0	.3	.6	3.3	9.9	7.2	17.3	(D)	.2	3.6
Arkansas .....	-	16	4	.8	12.9	.6	1.2	9.2	31.9	27.7	59.4	2.0	1.0	18.9
California .....	E1	363	90	6.4	115.6	4.7	9.1	72.7	220.8	189.0	414.7	9.4	6.2	155.1
Colorado .....	E2	37	12	1.0	16.0	.8	1.4	9.6	28.8	27.7	57.7	2.3	.7	17.0
Connecticut .....	-	73	27	2.1	35.2	1.6	2.9	21.3	66.4	53.9	123.4	2.3	2.7	54.4
Florida .....	E1	104	22	1.7	23.3	1.3	2.5	15.1	40.3	38.4	79.1	3.6	1.6	36.9
Georgia .....	E2	44	12	.6	7.8	.4	.8	5.2	15.5	14.3	29.9	1.2	.6	19.9
Illinois .....	-	206	64	5.3	98.4	4.1	7.8	65.2	212.8	238.9	461.5	10.6	7.8	265.4
Indiana .....	-	80	29	2.9	42.9	2.1	4.1	26.5	79.4	71.6	154.1	3.8	3.3	75.8
Iowa .....	-	25	11	1.9	37.6	1.1	2.2	18.2	81.2	47.1	132.7	1.8	1.8	48.2
Kentucky .....	-	29	12	1.9	30.2	1.5	2.9	20.7	69.4	48.1	119.3	1.0	1.4	35.9
Louisiana .....	E1	29	2	.2	3.5	.2	.4	2.5	7.1	5.0	12.4	.2	BB	(D)
Maryland .....	-	31	8	.6	11.3	.4	.8	8.3	28.7	29.5	60.1	.6	.8	37.0
Massachusetts .....	-	89	27	1.8	30.3	1.4	2.7	20.5	53.4	40.6	94.3	3.6	1.8	39.9
Michigan .....	-	172	53	3.8	74.0	2.8	5.6	47.1	131.2	127.0	264.9	9.1	3.9	94.4
Minnesota .....	-	63	15	.9	14.3	.7	1.3	9.6	28.3	24.4	53.1	2.2	1.2	32.5
Mississippi .....	-	16	4	.2	2.6	.1	.2	1.6	6.9	6.6	13.3	.1	(NA)	(NA)
Missouri .....	-	44	9	.6	10.5	.4	.8	6.1	18.4	21.7	40.1	1.6	1.0	21.8
Nebraska .....	-	15	3	.5	7.2	.4	.7	4.7	13.0	20.6	34.6	(D)	AA	(D)
New Jersey .....	-	132	40	3.1	53.7	2.5	4.9	36.3	101.9	91.0	196.9	6.4	3.4	76.7
New York .....	-	221	64	4.3	65.9	3.4	6.5	43.4	131.0	101.5	232.2	8.6	4.4	98.9
North Carolina .....	-	59	12	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	.6	11.1
Ohio .....	-	199	70	6.4	125.2	4.6	8.8	82.7	373.5	262.3	639.2	13.6	9.3	271.0
Oklahoma .....	-	51	10	.8	13.4	.6	1.2	9.2	20.3	25.6	47.9	.8	.9	19.7
Oregon .....	E2	37	3	.2	4.4	.2	.3	2.8	7.1	4.4	11.8	.2	.8	16.7
Pennsylvania .....	-	173	50	4.8	81.1	3.7	7.2	54.8	136.6	145.3	284.9	8.1	4.0	83.8
Rhode Island .....	-	27	11	1.2	13.2	1.0	1.9	9.1	27.5	21.5	48.3	.8	CC	(D)
South Carolina .....	E4	23	4	.3	4.6	.3	.5	2.5	10.7	9.4	20.4	(D)	CC	(D)
Tennessee .....	-	49	15	1.1	17.9	1.0	1.9	11.9	34.5	29.2	62.9	1.1	1.3	25.0

See footnotes at end of table.



**Table 2. Industry Statistics for Selected States: 1982 and 1977—Con.**

[Excludes data for auxiliaries. Includes data for States with 150 employees or more. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and geographic area	1982												1977	
	All establishments <sup>2</sup>			All employees		Production workers			Value added by manufacture <sup>4</sup> (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	All employees <sup>3</sup> (1,000)	Value added by manufacture (million dollars)
	E <sup>1</sup>	Total (no.)	With 20 employees or more (no.)	Number <sup>3</sup> (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)						
<b>INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.—Con.</b>														
Texas .....	—	224	53	3.6	57.6	2.8	5.4	36.8	116.8	98.4	218.9	6.9	2.3	49.7
Utah .....	E2	29	2	.3	5.0	.3	.5	3.6	10.4	7.9	17.9	1.1	.2	3.7
Virginia .....	—	26	11	CC	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	CC	(D)
Washington .....	E1	48	6	.4	7.7	.3	.6	5.4	12.4	16.8	29.5	1.4	.4	10.3
West Virginia .....	—	9	4	.3	6.0	.3	.5	4.6	14.5	19.3	35.0	.6	.6	23.2
Wisconsin .....	—	68	19	1.3	22.9	.9	1.7	13.7	51.0	47.8	99.4	2.2	1.4	37.7

Note: For qualifications of data, see footnotes on table 1a.

<sup>1</sup>Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at time data were tabulated. The following symbols are shown for those States where estimated data based on administrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

<sup>2</sup>Includes establishments with payroll at any time during year.

<sup>3</sup>Statistics for some producing States have been withheld to avoid disclosing data for individual companies. However, for States with 150 employees or more, number of establishments is shown and employment size range is indicated by one of the following symbols: AA—150 to 249 employees; BB—250 to 499 employees; CC—500 to 999 employees; EE—1,000 to 2,499 employees; FF—2,500 employees or more.

<sup>4</sup>Beginning in 1982, all respondents were requested to report their inventories at cost or market prior to adjustment to LIFO cost. This is a change from prior years in which respondents were permitted to value their inventories using any generally accepted accounting method. Consequently, data for inventories and value added by manufacture are not comparable to prior-year data.

**Table 3a. Summary Statistics for the Industry: 1982**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Steel springs, except wire (SIC 3493)	Valves and pipe fittings (SIC 3494)	Wire springs (SIC 3495)	Miscellaneous fabricated wire products (SIC 3496)	Metal foil and leaf (SIC 3497)	Fabricated pipe and fittings (SIC 3498)	Fabricated metal products, n.e.c. (SIC 3499)
Companies <sup>1</sup> ..... number ..	123	945	322	1 108	79	704	2 910
All establishments <sup>2</sup> ..... do ..	137	1 161	432	1 181	96	778	2 982
With 1 to 19 employees ..... do ..	82	435	196	736	29	431	2 171
With 20 to 99 employees ..... do ..	38	435	196	371	38	272	701
With 100 employees or more ..... do ..	17	291	40	74	29	75	110
All employees:							
Average for year ..... 1,000 ..	5.2	115.2	17.9	36.8	10.8	32.7	65.0
Annual payroll <sup>3</sup> ..... mil. dol ..	103.5	2 334.6	294.1	580.2	241.6	651.7	1 105.8
Production workers:							
Average for year ..... 1,000 ..	3.8	75.3	14.5	27.8	8.0	23.8	48.8
March ..... do ..	4.1	82.7	14.8	28.5	8.1	27.2	50.8
May ..... do ..	3.9	78.7	14.7	28.3	8.1	24.9	49.5
August ..... do ..	3.6	71.9	14.4	27.4	8.0	22.3	48.1
November ..... do ..	3.5	67.7	14.1	26.9	7.8	20.9	47.0
Hours ..... millions ..	6.8	144.2	27.5	53.2	15.9	46.4	94.2
January to March ..... do ..	1.9	40.3	6.6	13.4	4.1	13.0	23.9
April to June ..... do ..	1.8	38.1	7.1	13.6	4.0	12.2	24.1
July to September ..... do ..	1.6	33.1	7.0	12.9	4.0	10.8	22.7
October to December ..... do ..	1.5	32.6	6.8	13.2	3.9	10.3	23.0
Wages ..... mil. dol ..	67.3	1 343.5	208.8	375.0	171.3	425.0	715.2
Value added by manufacture <sup>4</sup> ..... do ..	204.5	5 219.8	596.8	1 164.8	660.6	1 440.4	2 304.1
Cost of materials, etc. <sup>5</sup> ..... do ..	204.8	3 734.8	498.7	1 171.7	1 156.7	1 674.3	2 039.8
Materials, parts, containers, etc., consumed ..... do ..	162.8	3 211.5	441.9	1 035.1	1 062.8	1 485.1	1 763.8
Resales ..... do ..	22.6	236.1	21.2	69.9	40.6	98.9	115.7
Fuels consumed <sup>6</sup> ..... do ..	9.6	47.3	7.7	18.4	13.9	17.2	32.3
Purchased electric energy <sup>7</sup> ..... do ..	5.8	98.5	12.0	28.2	37.1	24.8	54.7
Contract work ..... do ..	4.0	141.5	15.9	20.0	2.3	48.3	73.0
Value of shipments, including resales ..... do ..	413.5	9 039.9	1 104.3	2 357.3	1 831.3	3 115.8	4 406.0
Value of resales ..... do ..	37.3	304.4	25.6	83.4	27.7	122.2	164.3
Manufacturers' inventories (see tables 3b and 3c)							
Capital expenditures for plant and equipment <sup>8</sup> ..... do ..	8.3	397.9	37.3	82.4	40.9	148.5	132.8
New capital expenditures ..... do ..	7.3	363.9	31.9	66.7	40.1	137.7	114.1
New buildings and other structures ..... do ..	.3	72.1	5.2	9.6	5.4	33.8	15.0
New machinery and equipment ..... do ..	6.9	291.7	26.7	57.2	34.7	103.9	99.1
Used capital expenditures ..... do ..	1.1	34.1	5.5	15.7	.9	10.9	18.7
Primary product specialization ratio <sup>9</sup> ..... percent ..	81	90	92	93	81	97	92
Coverage ratio <sup>10</sup> ..... do ..	59	90	93	52	82	94	87

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during year.

<sup>3</sup>Data on supplemental labor costs are not included in annual payroll, but are shown in table 3d.

<sup>4</sup>Value added by manufacture is computed using inventory data reported on a cost or market basis prior to any adjustment to LIFO cost. See table 3b, footnote 1 for further explanation.

<sup>5</sup>Data on purchased services for the repair of buildings and machinery and for communication services are not included in cost of materials, etc., but are shown in table 3d.

<sup>6</sup>Data on purchased fuels by type were not collected for 1982. See MC82-S-4, Fuels and Electric Energy Consumed, for 1981 data on purchased fuels by type.

<sup>7</sup>Data on quantity of electric energy used for heat and power are included in table 3d.

<sup>8</sup>Data on capital expenditures for new machinery and equipment by type, depreciable assets, retirements, rental payments, and depreciation are included in table 3d.

<sup>9</sup>Represents ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for establishments classified in industry.

<sup>10</sup>Represents ratio of primary products shipped by establishments classified in industry to total shipments of such products by all manufacturing establishments, wherever classified.



**Table 3b. Value of Inventories for the Industry: End of 1981 and 1982**

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Steel springs, except wire (SIC 3493)		Valves and pipe fittings (SIC 3494)		Wire springs (SIC 3495)		Miscellaneous fabricated wire products (SIC 3496)	
	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982
<b>Total inventories<sup>1</sup></b> .....	<b>102.2</b>	<b>86.0</b>	<b>2 956.5</b>	<b>2 833.3</b>	<b>131.7</b>	<b>116.4</b>	<b>485.2</b>	<b>440.3</b>
Detail by method of valuation:								
Subject to LIFO costing <sup>2</sup> .....	61.7	54.3	1 290.7	1 253.9	27.3	26.6	179.9	160.7
LIFO reserve .....	21.6	18.3	401.8	429.1	9.1	9.1	59.8	55.2
LIFO value .....	40.1	36.1	888.9	824.8	18.2	17.6	120.1	105.5
Not subject to LIFO costing .....	29.8	22.5	1 279.9	1 290.4	71.7	61.8	166.5	161.0
Valuation method not reported <sup>3</sup> .....	10.7	9.1	362.4	282.0	32.4	27.8	135.2	116.9
Amount subject to LIFO reported without associated reserve and value <sup>4</sup> .....	(Z)	(Z)	23.5	7.1	.3	.2	3.6	1.6
Detail by stage of fabrication:								
Finished goods .....	37.2	37.5	1 179.9	1 213.5	40.7	37.3	186.1	178.0
Work in process .....	15.3	10.8	1 037.0	918.2	29.8	24.4	103.4	90.8
Materials and supplies .....	49.6	37.7	739.6	701.7	61.1	54.6	195.6	171.5

Item	Metal foil and leaf (SIC 3497)		Fabricated pipe and fittings (SIC 3498)		Fabricated metal products, n.e.c. (SIC 3499)	
	End of 1981	End of 1982	End of 1981	End of 1982	End of 1981	End of 1982
<b>Total inventories<sup>1</sup></b> .....	<b>305.4</b>	<b>284.0</b>	<b>950.5</b>	<b>897.5</b>	<b>812.0</b>	<b>709.1</b>
Detail by method of valuation:						
Subject to LIFO costing <sup>2</sup> .....	182.6	161.3	384.0	401.9	186.2	156.0
LIFO reserve .....	77.5	79.0	93.6	104.2	67.9	56.4
LIFO value .....	105.1	82.3	290.4	297.8	118.3	99.6
Not subject to LIFO costing .....	96.4	107.0	345.1	322.6	355.1	310.4
Valuation method not reported <sup>3</sup> .....	23.3	13.0	221.4	173.0	260.7	233.2
Amount subject to LIFO reported without associated reserve and value <sup>4</sup> .....	3.2	2.7	-	-	10.0	9.5
Detail by stage of fabrication:						
Finished goods .....	113.9	112.1	265.0	294.4	256.2	226.5
Work in process .....	78.5	66.3	240.4	209.7	252.5	219.9
Materials and supplies .....	113.0	105.6	445.1	393.5	303.3	262.7

<sup>1</sup>Effective with the 1982 Economic Censuses, uniform instructions for reporting inventories were introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (LIFO, FIFO, market, to name a few). In 1982, all respondents were requested to report inventories at cost or market. LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve. For further explanation, see inventories in appendixes.

<sup>2</sup>Only includes data reported by respondents who (a) indicated amount of inventories subject to LIFO cost, and (b) provided sufficient information to determine associated LIFO reserve and value figures.

<sup>3</sup>Includes data estimated for nonresponse and nonmail administrative records and data reported by respondents who provided total inventory figures without other information.

<sup>4</sup>Includes data reported by respondents who indicated their inventories were subject to LIFO cost, but did not provide associated LIFO reserve and value figures.

**Table 3c. Inventories by Specific Method of Valuation for the Industry: End of 1982**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Steel springs, except wire (SIC 3493)		Valves and pipe fittings (SIC 3494)		Wire springs (SIC 3495)		Miscellaneous fabricated wire products (SIC 3496)	
	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)
<b>Total inventories</b> .....	<b>100.0</b>	<b>(X)</b>	<b>100.0</b>	<b>(X)</b>	<b>100.0</b>	<b>(X)</b>	<b>100.0</b>	<b>(X)</b>
Last-In, First-Out (LIFO) methods .....	63.2	(X)	44.3	(X)	22.9	(X)	36.5	(X)
Non-LIFO methods .....	26.2	(X)	45.5	(X)	53.1	(X)	36.6	(X)
Cost basis:								
First-In, First-Out (FIFO) .....	10.3	1.3	13.1	.8	35.6	3.5	16.0	1.7
Average cost .....	13.0	1.5	3.3	.2	5.4	1.2	2.2	1.0
Specific or actual cost .....	.6	.1	5.6	.3	(S)	(S)	3.8	1.3
Standard cost .....	1.5	.2	20.1	.7	5.7	2.4	10.2	1.6
Other .....	(Z)	(Z)	3.0	.1	(S)	(S)	3.6	1.0
Market basis:								
Market lower than cost .....	.8	.1	.3	.1	(Z)	(Z)	.3	.1
Market always used .....	(Z)	(Z)	.2	(Z)	(Z)	(Z)	(S)	(S)
Valuation method not reported .....	10.6	(X)	10.0	(X)	23.9	(X)	26.6	(X)
Amount subject to LIFO reported without associated reserve and value .....	(Z)	(X)	.2	(X)	.1	(X)	.4	(X)

See footnotes at end of table.

**Table 3c. Inventories by Specific Method of Valuation for the Industry: End of 1982—Con.**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Metal foil and leaf (SIC 3497)		Fabricated pipe and fittings (SIC 3498)		Fabricated metal products, n.e.c. (SIC 3499)	
	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)	Percent of total	Absolute standard error (percent)
<b>Total Inventories</b> .....	<b>100.0</b>	<b>(X)</b>	<b>100.0</b>	<b>(X)</b>	<b>100.0</b>	<b>(X)</b>
Last-In, First-Out (LIFO) methods .....	56.8	(X)	44.8	(X)	22.0	(X)
Non-LIFO methods .....	37.7	(X)	35.9	(X)	43.8	(X)
Cost basis:						
First-In, First-Out (FIFO) .....	16.2	1.3	11.4	3.1	22.4	2.0
Average cost .....	5.3	1.3	13.2	2.7	2.7	.3
Specific or actual cost .....	1.8	.4	2.9	.5	7.1	2.1
Standard cost .....	13.7	.3	6.0	1.1	9.6	1.0
Other .....	.7	.1	(S)	(S)	1.6	.3
Market basis:						
Market lower than cost .....	(Z)	(Z)	.4	.1	(Z)	(Z)
Market always used .....	(Z)	(Z)	.1	(Z)	(S)	(S)
Valuation method not reported .....	4.6	(X)	19.3	(X)	32.9	(X)
Amount subject to LIFO reported without associated reserve and value .....	.9	(X)	(Z)	(X)	1.3	(X)

Note: The percentages shown for the LIFO and non-LIFO totals and the categories "valuation method not reported" and "amount subject to LIFO reported..." are based on the census universe estimates included in table 3b. The percentages shown for the specific non-LIFO methods of valuation (e.g., FIFO, etc.) are based on a representative sample of establishments included in the annual survey of manufactures (ASM) panel for 1982 (see appendixes for description of ASM). The absolute standard error of each of the ASM estimates is shown above.

**Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Steel springs, except wire (SIC 3493)		Valves and pipe fittings (SIC 3494)		Wire springs (SIC 3495)		Miscellaneous fabricated wire products (SIC 3496)	
	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)
<b>Supplemental labor costs:</b>								
Total .....	29.6	3	533.9	1	64.8	4	119.6	3
Legal costs .....	10.1	2	209.3	1	28.5	4	53.3	2
Voluntary costs .....	19.5	3	324.5	1	36.3	5	66.3	4
<b>Purchased services:</b>								
Cost of purchased services for the repair of—								
Buildings and other structures .....	.5	10	11.3	8	1.2	6	2.5	11
Response coverage ratio (percent) <sup>2</sup> .....	78.1	(X)	71.4	(X)	57.8	(X)	62.5	(X)
Machinery .....	2.9	7	42.1	4	6.5	12	13.0	8
Response coverage ratio (percent) <sup>2</sup> .....	86.9	(X)	77.9	(X)	65.6	(X)	68.9	(X)
Cost of purchased communication services .....	1.1	16	29.0	4	2.4	16	6.2	11
Response coverage ratio (percent) <sup>2</sup> .....	80.4	(X)	77.2	(X)	57.1	(X)	70.4	(X)
<b>Electric energy used for heat and power:</b>								
Purchased:								
Quantity (million kWh) .....	102.3	2	1 792.6	1	187.5	3	473.9	1
Cost .....	5.8	(X)	98.5	(X)	12.0	(X)	28.2	(X)
Generated less sold (million kWh) .....	(S)	(S)	(S)	(S)	-	-	-	-
<b>Gross book value of depreciable assets:</b>								
Total:								
Beginning of year .....	193.6	6	3 082.2	2	349.7	9	719.2	4
New capital expenditures .....	6.9	29	313.6	6	42.0	30	51.2	12
Used capital expenditures .....	.4	14	27.9	11	8.9	41	8.6	12
Retirements .....	27.9	20	152.2	7	18.0	11	21.8	18
End of year .....	173.1	7	3 271.5	2	382.6	8	757.1	4
<b>Buildings and other structures:</b>								
Beginning of year .....	54.7	6	759.5	3	80.3	13	208.5	6
New capital expenditures .....	.3	14	45.2	5	1.7	12	8.0	23
Used capital expenditures .....	(Z)	75	2.1	40	3.7	87	.4	43
Retirements .....	6.6	19	23.8	15	3.0	9	1.6	18
End of year .....	48.3	7	783.0	3	82.7	13	215.4	6
<b>Machinery and equipment:</b>								
Beginning of year .....	138.9	6	2 322.8	2	269.4	10	510.6	5
New capital expenditures .....	6.7	30	268.4	6	40.3	31	43.2	12
Automobiles, trucks, etc., for highway use .....	.1	44	8.9	44	.9	33	2.3	24
Computers and peripheral data processing equipment .....	.1	30	11.9	13	.5	40	2.3	54
All other .....	5.8	34	210.9	6	20.7	19	28.3	12
New machinery and equipment, n.s.k. <sup>3</sup> .....	.6	(S)	36.8	(S)	18.3	(S)	10.3	(S)
Used capital expenditures .....	.4	10	25.9	11	5.2	32	8.2	12
Retirements .....	21.2	20	128.4	5	15.0	13	20.3	20
End of year .....	124.7	7	2 488.6	2	299.8	9	541.7	5
<b>Rental payments:</b>								
Total .....	1.5	8	74.4	4	8.1	18	18.3	14
Buildings and other structures .....	.5	9	22.9	10	4.5	22	10.3	18
Machinery and equipment .....	1.0	10	51.5	4	3.6	24	8.1	16
<b>Depreciation charges during 1982:</b>								
Total .....	14.0	7	248.8	2	29.1	10	57.2	6
Buildings and other structures .....	2.1	4	33.8	6	3.4	16	9.5	11
Machinery and equipment .....	11.9	7	215.0	2	25.7	11	47.7	6

See footnotes at end of table.



**Table 3d. Supplemental Industry Statistics Based on Sample Estimates: 1982—Con.**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Metal foil and leaf (SIC 3497)		Fabricated pipe and fittings (SIC 3498)		Fabricated metal products, n.e.c. (SIC 3499)	
	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)	Amount (million dollars)	Relative standard error of estimate <sup>1</sup> (percent)
<b>Supplemental labor costs:</b>						
Total .....	64.6	1	142.9	3	232.3	2
Legal costs .....	21.8	1	60.9	3	104.7	3
Voluntary costs .....	42.8	1	81.9	3	127.6	3
<b>Purchased services:</b>						
Cost of purchased services for the repair of—						
Buildings and other structures .....	3.3	1	2.0	12	4.3	10
Response coverage ratio (percent) <sup>2</sup> .....	82.6	(X)	65.2	(X)	55.1	(X)
Machinery .....	8.6	1	11.8	12	25.8	7
Response coverage ratio (percent) <sup>2</sup> .....	76.6	(X)	72.1	(X)	65.9	(X)
Cost of purchased communication services .....	2.3	6	6.1	11	11.6	11
Response coverage ratio (percent) <sup>2</sup> .....	82.9	(X)	68.7	(X)	63.2	(X)
<b>Electric energy used for heat and power:</b>						
Purchased:						
Quantity (million kWh) .....	721.8	1	412.7	3	884.6	1
Cost .....	37.1	(X)	24.8	(X)	54.7	(X)
Generated less sold (million kWh) .....	(2)	1	(S)	(S)	(S)	(S)
<b>Gross book value of depreciable assets:</b>						
Total:						
Beginning of year .....	448.5	2	929.2	6	1 308.7	5
New capital expenditures .....	32.6	8	84.9	11	105.7	9
Used capital expenditures .....	.8	2	6.2	24	29.7	44
Retirements .....	8.3	13	23.9	31	69.3	42
End of year .....	473.6	3	996.5	6	1 374.8	4
<b>Buildings and other structures:</b>						
Beginning of year .....	91.9	2	294.9	5	310.8	6
New capital expenditures .....	3.5	2	16.7	13	14.2	18
Used capital expenditures .....	.2	10	1.5	2	5.0	56
Retirements .....	2.4	45	8.3	42	8.4	48
End of year .....	93.2	2	304.8	5	321.6	7
<b>Machinery and equipment:</b>						
Beginning of year .....	356.6	2	634.4	7	998.0	5
New capital expenditures .....	29.1	9	68.2	12	91.5	10
Automobiles, trucks, etc., for highway use .....	.4	1	.9	23	8.8	30
Computers and peripheral data processing equipment .....	.4	1	1.7	23	2.0	21
All other .....	25.6	10	39.7	17	55.7	11
New machinery and equipment, n.s.k. <sup>3</sup> .....	2.7	(S)	25.8	(S)	25.0	(S)
Used capital expenditures .....	.6	1	4.7	32	24.8	49
Retirements .....	6.0	2	15.5	26	61.0	47
End of year .....	380.3	3	691.7	7	1 053.2	5
<b>Rental payments:</b>						
Total .....	6.9	3	14.8	14	38.9	10
Buildings and other structures .....	3.3	5	5.4	20	22.1	15
Machinery and equipment .....	3.5	2	9.4	14	16.8	14
<b>Depreciation charges during 1982:</b>						
Total .....	27.4	2	64.4	6	110.1	11
Buildings and other structures .....	3.6	2	12.0	7	19.6	18
Machinery and equipment .....	23.8	2	52.3	7	90.5	10

Note: Data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used expenditures are also shown in table 3a. Data in table 3a are census universe totals and may differ from annual survey of manufactures (ASM) sample estimates shown in this table. Data in this table represent best estimates of year-to-year change as measured by the continuing ASM sample. However, they are subject to sampling error and, hence, as estimates of level, are not as reliable as universe figures shown in table 3a.

<sup>1</sup>For description of relative standard error of estimate, see Qualifications of the Data in appendixes.

<sup>2</sup>Measure of extent to which respondents reported each item. Derived for each item by calculating the ratio of weighted employment for those sample establishments that reported the specific inquiry to weighted total employment for all sample establishments classified in industry. (See appendixes for explanation of sample weight.)

<sup>3</sup>Represents total machinery and equipment expenditures for establishments that did not break down their expenditures by specific type.

**Table 4. Industry Statistics by Employment Size of Establishment: 1982**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and employment size class	E <sup>1</sup>	All estab- lish- ments (no.)	All employees		Production workers			Value added by manufac- ture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expend- itures (million dollars)	End-of- year invento- ries (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
<b>INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE</b>												
Total .....	-	137	5.2	103.5	3.8	6.8	67.3	204.5	204.8	413.5	7.3	86.0
Establishments with an average of—												
1 to 4 employees .....	E8	37	.1	1.4	.1	.1	1.1	2.9	2.7	5.7	.1	1.0
5 to 9 employees .....	E7	18	.1	2.1	.1	.2	1.5	4.0	3.3	7.3	.1	1.4
10 to 19 employees .....	E3	27	.4	7.4	.3	.5	4.6	13.2	14.1	28.0	.5	3.8
20 to 49 employees .....	E1	27	.8	14.6	.6	1.1	8.6	29.7	31.8	60.0	.9	8.6
50 to 99 employees .....	-	11	.7	15.5	.5	1.0	10.6	21.6	29.9	52.7	.8	12.2
100 to 249 employees .....	-	14	2.1	42.6	1.5	2.6	26.6	95.4	101.2	200.1	4.8	48.6
250 to 499 employees .....	-	3	1.0	20.0	.7	1.3	14.3	37.6	21.8	59.6	(D)	10.4
Covered by administrative records <sup>2</sup> .....	E9	48	.3	4.2	.2	.4	3.0	8.1	7.9	16.3	.3	3.0

See footnotes at end of table.



Table 4. Industry Statistics by Employment Size of Establishment: 1982—Con.

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and employment size class	E <sup>1</sup>	All establishments (no.)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)	End-of-year inventories (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)					
INDUSTRY 3494, VALVES AND PIPE FITTINGS												
Total.....	-	1 161	115.2	2 334.6	75.3	144.2	1 343.5	5 219.8	3 734.8	9 039.9	363.9	2 833.3
Establishments with an average of—												
1 to 4 employees.....	E7	148	.3	4.4	.2	.5	3.0	13.1	9.7	23.6	5.1	7.2
5 to 9 employees.....	E6	112	.8	13.3	.5	1.0	7.7	31.6	25.9	58.8	1.9	17.9
10 to 19 employees.....	E3	175	2.4	44.6	1.7	3.3	26.2	103.9	94.7	201.1	6.5	52.5
20 to 49 employees.....	E2	275	8.6	157.7	6.1	11.7	91.0	364.4	302.4	668.6	31.2	175.4
50 to 99 employees.....	-	160	11.2	215.6	7.8	15.1	130.7	499.4	414.1	935.7	34.6	244.4
100 to 249 employees.....	-	160	25.7	510.8	17.0	32.5	292.0	1 140.4	896.2	2 095.3	79.4	616.8
250 to 499 employees.....	-	89	31.9	647.3	20.4	39.2	371.9	1 509.1	1 022.6	2 531.7	107.3	833.3
500 to 999 employees.....	-	33	20.4	439.7	13.2	25.6	257.4	912.2	558.5	1 490.4	62.3	532.1
1,000 to 2,499 employees.....	-	8	13.7	301.1	8.4	15.3	163.6	645.6	410.8	1 034.6	35.6	354.1
2,500 employees or more.....	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records <sup>2</sup> .....	E9	258	2.1	30.4	1.4	2.8	18.4	67.6	49.7	121.1	3.9	37.2
INDUSTRY 3495, WIRE SPRINGS												
Total.....	E1	432	17.9	294.1	14.5	27.5	208.8	596.8	498.7	1 104.3	31.9	116.4
Establishments with an average of—												
1 to 4 employees.....	E7	64	.1	2.0	.1	.2	1.8	3.8	3.5	7.7	.8	.8
5 to 9 employees.....	E5	50	.4	5.1	.3	.6	3.7	12.2	8.5	21.4	.4	2.1
10 to 19 employees.....	E3	82	1.2	16.1	.9	1.8	11.2	41.2	34.8	76.1	1.7	6.9
20 to 49 employees.....	E1	129	4.2	67.1	3.3	6.4	45.9	132.3	103.0	236.2	4.6	24.6
50 to 99 employees.....	E1	67	4.6	74.9	3.8	7.1	53.7	148.6	122.3	273.1	7.6	28.3
100 to 249 employees.....	-	32	4.7	78.5	3.8	7.2	57.7	168.5	149.1	318.6	10.5	34.4
250 to 499 employees.....	E2	7	2.8	50.4	2.2	4.4	34.8	90.3	77.6	171.2	6.3	19.3
500 to 999 employees.....	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records <sup>2</sup> .....	E9	117	1.0	12.1	.9	1.7	9.2	23.6	18.9	42.7	.9	4.9
INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS												
Total.....	E1	1 181	36.8	580.2	27.8	53.2	375.0	1 164.8	1 171.7	2 357.3	66.7	440.3
Establishments with an average of—												
1 to 4 employees.....	E9	301	.6	8.1	.5	1.0	6.2	19.7	21.0	41.2	1.4	8.4
5 to 9 employees.....	E4	203	1.4	19.3	1.0	2.0	12.6	44.4	48.7	92.9	2.6	15.1
10 to 19 employees.....	E2	232	3.2	45.9	2.4	4.5	28.2	95.8	117.0	216.7	4.2	31.5
20 to 49 employees.....	E2	254	8.0	121.3	6.2	11.8	76.7	236.7	272.8	512.1	13.7	83.1
50 to 99 employees.....	E1	117	8.1	122.6	6.2	12.1	80.1	252.7	261.7	524.9	16.2	87.3
100 to 249 employees.....	E1	56	8.3	130.9	6.1	11.8	85.3	280.8	239.6	519.7	17.1	107.2
250 to 499 employees.....	-	15	4.8	81.0	3.4	6.5	51.3	151.3	118.7	272.4	6.0	60.7
500 to 999 employees.....	-	2	2.5	51.1	2.0	3.6	34.6	83.5	92.3	177.4	5.6	47.0
1,000 to 2,499 employees.....	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records <sup>2</sup> .....	E9	348	1.2	13.3	1.0	1.9	9.3	31.7	31.2	64.0	2.3	12.5
INDUSTRY 3497, METAL FOIL AND LEAF												
Total.....	-	96	10.8	241.6	8.0	15.9	171.3	660.6	1 156.7	1 831.3	40.1	284.0
Establishments with an average of—												
1 to 4 employees.....	E6	5	(Z)	.1	(Z)	(Z)	.1	.2	.4	.7	.1	.1
5 to 9 employees.....	E5	10	.1	1.2	(Z)	.1	.7	2.1	3.7	5.8	.1	.9
10 to 19 employees.....	E1	14	.2	3.1	.1	.2	1.9	11.8	15.6	27.9	.3	3.1
20 to 49 employees.....	-	20	.7	13.0	.5	1.0	8.0	29.8	61.3	91.7	2.4	11.3
50 to 99 employees.....	E1	18	1.3	29.9	1.0	1.9	19.7	66.1	152.8	217.9	4.9	31.7
100 to 249 employees.....	-	15	2.4	47.2	1.6	3.3	28.3	116.0	153.7	268.8	11.2	46.4
250 to 499 employees.....	-	8	2.2	49.9	1.7	3.3	36.2	142.0	229.0	366.0	9.0	56.9
500 to 999 employees.....	-	6	3.9	97.2	3.0	6.0	76.5	292.6	540.1	852.5	12.1	133.6
Covered by administrative records <sup>2</sup> .....	E9	9	.1	.6	(Z)	.1	.4	1.1	2.5	3.6	.1	.5
INDUSTRY 3498, FABRICATED PIPE AND FITTINGS												
Total.....	E1	778	32.7	651.7	23.8	46.4	425.0	1 440.4	1 674.3	3 115.8	137.7	897.5
Establishments with an average of—												
1 to 4 employees.....	E9	162	.3	5.2	.3	.5	4.2	10.7	14.0	25.1	.6	6.7
5 to 9 employees.....	E6	130	.9	14.2	.7	1.3	9.6	26.8	36.7	64.8	10.0	16.0
10 to 19 employees.....	E4	139	2.0	33.6	1.5	2.7	21.8	67.5	93.2	165.2	3.7	37.5
20 to 49 employees.....	E2	182	5.7	106.2	4.3	8.3	68.4	221.6	318.5	548.9	12.6	112.6
50 to 99 employees.....	E1	90	6.1	114.9	4.7	9.5	78.1	228.1	311.0	544.9	28.1	160.0
100 to 249 employees.....	-	55	8.9	186.1	6.4	12.8	126.2	408.7	431.5	827.3	36.2	282.4
250 to 499 employees.....	-	15	5.1	106.2	3.5	7.0	67.7	254.4	293.1	550.1	37.1	209.8
500 to 999 employees.....	-	4	3.6	85.3	2.4	4.5	49.1	222.7	176.3	389.7	9.4	72.6
1,000 to 2,499 employees.....	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records <sup>2</sup> .....	E9	239	1.3	17.5	1.0	1.9	12.7	34.4	49.2	85.2	2.0	23.2
INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.												
Total.....	E1	2 982	65.0	1 105.8	48.8	94.2	715.2	2 304.1	2 039.8	4 406.0	114.1	709.1
Establishments with an average of—												
1 to 4 employees.....	E9	1 004	1.8	24.0	1.4	2.9	18.9	55.8	52.0	109.3	1.8	18.6
5 to 9 employees.....	E6	573	3.9	56.7	3.0	5.7	38.0	114.8	93.9	210.6	5.4	34.1
10 to 19 employees.....	E3	594	8.1	127.2	6.1	11.5	81.4	240.7	216.1	461.3	11.3	66.9
20 to 49 employees.....	E2	519	15.4	258.0	11.8	22.7	165.9	493.7	433.5	933.9	22.6	150.0
50 to 99 employees.....	E1	182	12.3	214.8	9.2	17.8	134.6	418.5	371.9	799.4	25.4	122.8
100 to 249 employees.....	-	86	13.3	232.7	10.1	19.5	152.0	479.9	481.4	978.6	25.5	178.5
250 to 499 employees.....	-	19	6.3	104.9	4.7	8.9	71.0	208.5	234.8	453.0	11.6	77.9
500 to 999 employees.....	-	4	3.9	87.6	2.6	5.2	53.4	292.2	156.3	459.8	10.5	60.4
1,000 to 2,499 employees.....	-	1	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Covered by administrative records <sup>2</sup> .....	E9	828	2.2	24.2	1.8	3.5	17.9	54.0	51.4	107.0	2.1	19.8

See footnotes at end of table.



**Table 4. Industry Statistics by Employment Size of Establishment: 1982—Con.**

Note: For qualifications of data, see footnotes on table 1a. Data shown as a (D) are included in underscored figures above.

<sup>1</sup>Payroll and sales data for some small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate the items shown for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at time data were tabulated. The following symbols are shown for those States where estimated data based on administrative records data account for 10 percent or more of figures shown: E1—10 to 19 percent; E2—20 to 29 percent; E3—30 to 39 percent; E4—40 to 49 percent; E5—50 to 59 percent; E6—60 to 69 percent; E7—70 to 79 percent; E8—80 to 89 percent; E9—90 percent or more.

<sup>2</sup>Report forms were not mailed to small single-unit companies with up to 20 employees (cutoff varied by industry). Payroll and sales data for 1982 were obtained from administrative records supplied by other agencies of the Federal Government. Those data were then used in conjunction with industry averages to estimate the items shown. Data are also included in respective size classes shown.

**Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982**

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing data for individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Industry or product class code	Industry or product class by percent of specialization	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3493	Steel springs, except wire:										
	Entire industry .....	137	5.2	103.5	3.8	6.8	67.3	204.5	204.8	413.5	7.3
	Establishments with 75 percent specialization or more ..	114	2.8	55.9	2.1	3.7	36.6	113.2	118.7	231.6	3.3
34931	Hot formed springs:										
	Establishments with this product class primary .....	57	3.3	69.3	2.4	4.3	44.7	141.3	159.5	304.1	4.8
	Establishments with 75 percent specialization or more in class .....	47	2.3	46.2	1.7	2.9	30.2	94.7	97.1	191.2	2.6
34932	Cold formed springs:										
	Establishments with this product class primary .....	20	1.5	28.4	1.1	2.0	18.5	51.6	35.1	87.4	2.1
	Establishments with 75 percent specialization or more in class .....	7	.2	3.1	.1	.2	1.7	5.8	9.6	15.5	.2
3494	Valves and pipe fittings:										
	Entire industry .....	1 161	115.2	2 334.6	75.3	144.2	1 343.5	5 219.8	3 734.8	9 039.9	363.9
	Establishments with 75 percent specialization or more ..	1 042	93.7	1 886.7	62.3	119.8	1 107.7	4 147.4	3 123.6	7 379.5	294.4
34944	Plumbing and heating valves and specialties:										
	Establishments with this product class primary .....	32	2.9	51.6	2.0	3.6	30.3	130.7	88.9	223.7	7.9
	Establishments with 75 percent specialization or more in class .....	22	1.6	29.3	1.1	1.9	16.2	67.8	52.1	122.2	2.3
34945	Metal fittings, flanges, and unions for piping systems:										
	Establishments with this product class primary .....	161	18.2	351.2	12.9	24.3	222.2	733.0	710.1	1 467.5	58.1
	Establishments with 75 percent specialization or more in class .....	129	13.7	262.1	9.8	18.6	168.9	552.2	554.2	1 118.7	45.3
34947	Automatic regulating and control valves:										
	Establishments with this product class primary .....	107	16.7	347.0	10.2	19.5	184.2	813.6	490.3	1 298.9	43.8
	Establishments with 75 percent specialization or more in class .....	85	10.2	198.4	6.7	13.0	113.5	435.2	290.8	741.6	22.3
34948	Solenoid valves:										
	Establishments with this product class primary .....	24	4.1	76.8	2.7	5.0	42.6	195.4	86.1	288.5	7.8
	Establishments with 75 percent specialization or more in class .....	11	.5	10.0	.4	.6	5.9	20.0	12.4	33.6	2.4
34949	Nuclear valves:										
	Establishments with this product class primary .....	11	1.5	35.8	.7	1.5	15.0	89.5	49.7	133.3	3.1
	Establishments with 75 percent specialization or more in class .....	5	.3	7.0	.2	.3	3.6	17.8	12.7	32.1	.3
3494A	Industrial valves:										
	Establishments with this product class primary .....	262	43.1	917.9	27.8	53.9	527.7	2 021.1	1 484.5	3 553.2	165.0
	Establishments with 75 percent specialization or more in class .....	213	31.5	671.3	20.5	39.7	393.1	1 488.4	1 150.8	2 682.9	117.4
3494B	Hydraulic valves, except aerospace type:										
	Establishments with this product class primary .....	47	5.5	106.1	3.5	6.5	58.0	205.8	126.8	329.8	21.0
	Establishments with 75 percent specialization or more in class .....	25	3.0	59.0	2.0	3.7	34.7	116.8	74.2	187.9	12.4
3494C	Pneumatic valves, except aerospace type:										
	Establishments with this product class primary .....	36	4.9	97.4	3.1	5.8	53.7	214.7	113.5	333.4	11.5
	Establishments with 75 percent specialization or more in class .....	22	2.0	44.8	1.4	2.6	25.6	103.2	56.4	163.8	6.2
3494D	Aerospace type hydraulic and pneumatic valves:										
	Establishments with this product class primary .....	28	3.0	60.7	2.1	4.0	34.9	155.0	59.2	203.2	4.3
	Establishments with 75 percent specialization or more in class .....	18	1.8	35.6	1.4	2.5	21.8	96.8	38.1	126.3	2.5
3494E	Fittings for metal and plastics tubing used in fluid power systems, except aerospace type:										
	Establishments with this product class primary .....	24	4.0	79.7	3.0	5.7	54.0	211.8	165.0	385.4	15.0
	Establishments with 75 percent specialization or more in class .....	15	1.6	30.1	1.1	2.1	21.2	68.7	46.6	118.3	4.9
3494F	Hydraulic and pneumatic hose or tube end fittings and assemblies, except aerospace type:										
	Establishments with this product class primary .....	52	5.0	95.3	3.2	6.1	53.8	203.7	213.1	424.5	9.2
	Establishments with 75 percent specialization or more in class .....	44	3.5	65.4	2.2	4.2	35.8	132.9	178.2	316.9	5.1
3494G	Aerospace type hydraulic and pneumatic hose or tube end fittings										
	Establishments with this product class primary .....	11	2.0	45.0	1.2	2.5	26.0	85.5	41.5	129.6	3.9
	Establishments with 75 percent specialization or more in class .....	6	1.2	28.5	.7	1.4	14.9	54.1	28.2	85.9	2.7
3494H	Parts for fluid power valves:										
	Establishments with this product class primary .....	7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
	Establishments with 75 percent specialization or more in class .....	4	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

See footnotes at end of table.



**Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982—**  
**Con.**

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing data for individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Industry or product class code	Industry or product class by percent of specialization	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
<b>3495</b>	<b>Wire springs:</b>										
	Entire industry .....	432	17.9	294.1	14.5	27.5	208.8	596.8	498.7	1 104.3	31.9
	Establishments with 75 percent specialization or more ..	396	15.7	252.3	12.8	24.5	181.2	514.0	450.4	970.3	26.2
<b>34952</b>	<b>Precision mechanical springs:</b>										
	Establishments with this product class primary .....	178	9.7	173.0	7.7	14.8	120.4	327.7	210.3	541.8	18.1
	Establishments with 75 percent specialization or more in class .....	129	5.6	96.4	4.5	8.6	66.6	182.8	122.9	306.7	9.8
<b>34953</b>	<b>Other wire springs:</b>										
	Establishments with this product class primary .....	120	7.1	108.2	5.9	11.0	78.5	244.1	268.5	517.2	12.8
	Establishments with 75 percent specialization or more in class .....	105	6.2	92.9	5.2	9.9	68.6	214.5	236.9	455.4	10.2
<b>3496</b>	<b>Miscellaneous fabricated wire products:</b>										
	Entire industry .....	1 181	36.8	580.2	27.8	53.2	375.0	1 164.8	1 171.7	2 357.3	66.7
	Establishments with 75 percent specialization or more ..	1 130	32.4	502.5	24.4	46.7	321.2	1 019.9	1 022.7	2 065.8	57.8
<b>34961</b>	<b>Noninsulated ferrous wire rope, cable, etc., not produced by wire drawers (also see code 33151):</b>										
	Establishments with this product class primary .....	138	5.2	87.7	3.7	7.1	51.5	177.4	226.3	404.4	15.3
	Establishments with 75 percent specialization or more in class .....	117	4.0	66.8	2.9	5.5	40.3	130.9	178.9	312.9	13.6
<b>34964</b>	<b>Ferrous wire cloth and other woven wire products, not produced by wire drawers (also see code 33157):</b>										
	Establishments with this product class primary .....	65	3.2	58.8	2.2	4.0	34.6	111.5	95.4	207.8	4.4
	Establishments with 75 percent specialization or more in class .....	51	2.6	45.2	1.7	3.1	26.4	88.0	79.2	167.3	3.1
<b>34965</b>	<b>Nonferrous wire cloth and other woven wire products, not produced by wire drawers (also see code 33575):</b>										
	Establishments with this product class primary .....	16	.8	14.6	.6	1.1	10.0	38.8	24.5	61.9	.6
	Establishments with 75 percent specialization or more in class .....	11	.5	9.3	.4	.7	6.0	26.1	11.2	36.0	.4
<b>34966</b>	<b>Fence and fence gates, not produced by wire drawers (also see code 33156):</b>										
	Establishments with this product class primary .....	55	1.6	25.5	1.2	2.3	16.3	46.7	103.9	160.5	3.2
	Establishments with 75 percent specialization or more in class .....	50	1.5	23.0	1.1	2.2	14.9	44.1	97.0	150.8	(D)
<b>34967</b>	<b>Steel nails and spikes, not made by wire drawers (also see code 33152):</b>										
	Establishments with this product class primary .....	30	3.2	57.1	2.7	4.9	43.5	97.4	119.5	215.8	4.2
	Establishments with 75 percent specialization or more in class .....	23	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>34968</b>	<b>Other fabricated wire products, not produced by wire drawers (also see code 33159):</b>										
	Establishments with this product class primary .....	385	18.8	287.6	14.5	27.9	186.8	586.0	500.5	1 095.0	31.5
	Establishments with 75 percent specialization or more in class .....	352	16.3	245.8	12.6	24.4	160.5	502.4	432.7	941.7	26.0
<b>3497</b>	<b>Metal foil and leaf:</b>										
	Entire industry .....	96	10.8	241.6	8.0	15.9	171.3	660.6	1 156.7	1 831.3	40.1
	Establishments with 75 percent specialization or more ..	82	7.4	163.1	5.4	10.4	110.9	462.1	821.7	1 292.3	23.9
<b>34971</b>	<b>Converted unmounted aluminum foil packaging products:</b>										
	Establishments with this product class primary .....	17	3.1	75.3	2.4	4.7	58.4	248.2	520.4	777.7	4.3
	Establishments with 75 percent specialization or more in class .....	12	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>34972</b>	<b>Laminated aluminum foil flexible packaging:</b>										
	Establishments with this product class primary .....	36	5.0	111.5	3.8	7.8	81.9	269.6	459.3	734.6	19.3
	Establishments with 75 percent specialization or more in class .....	20	1.4	28.4	1.0	1.9	18.5	55.2	110.5	165.7	3.1
<b>34973</b>	<b>Converted foil for nonpackaging applications:</b>										
	Establishments with this product class primary .....	33	2.6	54.2	1.7	3.4	30.6	141.8	174.6	315.4	16.4
	Establishments with 75 percent specialization or more in class .....	30	2.4	49.4	1.6	3.0	27.8	130.8	144.2	274.1	(D)
<b>3498</b>	<b>Fabricated pipe and fittings:</b>										
	Entire industry .....	778	32.7	651.7	23.8	46.4	425.0	1 440.4	1 674.3	3 115.8	137.7
	Establishments with 75 percent specialization or more ..	741	30.4	608.6	22.2	43.5	399.0	1 352.4	1 572.0	2 926.7	131.5
<b>3499</b>	<b>Fabricated metal products, n.e.c.:</b>										
	Entire industry .....	2 982	65.0	1 105.8	48.8	94.2	715.2	2 304.1	2 039.8	4 406.0	114.1
	Establishments with 75 percent specialization or more ..	2 796	55.1	925.6	41.5	80.5	600.6	1 941.7	1 741.9	3 731.3	97.8
<b>34991</b>	<b>Safes and vaults:</b>										
	Establishments with this product class primary .....	40	5.4	111.8	3.6	7.0	68.6	347.7	189.1	541.2	13.3
	Establishments with 75 percent specialization or more in class .....	35	4.0	84.1	2.7	5.2	48.9	289.1	146.8	439.0	9.7
<b>34992</b>	<b>Collapsible tubes:</b>										
	Establishments with this product class primary .....	18	2.0	29.0	1.8	3.3	23.2	50.1	33.9	83.4	1.0
	Establishments with 75 percent specialization or more in class .....	17	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>34993</b>	<b>Flat metal strapping:</b>										
	Establishments with this product class primary .....	14	1.5	33.9	1.1	1.8	23.8	102.8	188.2	305.5	2.2
	Establishments with 75 percent specialization or more in class .....	13	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
<b>34995</b>	<b>Metal ladders:</b>										
	Establishments with this product class primary .....	46	1.9	32.5	1.4	2.7	19.0	77.0	79.8	157.9	2.7
	Establishments with 75 percent specialization or more in class .....	36	1.2	20.8	.9	1.8	12.6	46.5	53.9	101.3	1.6

See footnotes at end of table.



**Table 5a. Industry Statistics by Industry and Primary Product Class Specialization: 1982—**  
**Con.**

[Table presents selected statistics for establishments according to their degree of specialization in products primary to their industry. Measures of plant specialization shown are (1) industry specialization: ratio of primary product shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment; and (2) product class specialization: ratio of largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment. See appendix for method of computing ratios. Statistics for establishments with specialization ratios of less than 75 percent are included in total lines but are not shown as a separate class. In addition, data may not be shown for various reasons; e.g., to avoid disclosing data for individual companies. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes.]

Industry or product class code	Industry or product class by percent of specialization	All establishments (number)	All employees		Production workers			Value added by manufacture (million dollars)	Cost of materials (million dollars)	Value of shipments (million dollars)	New capital expenditures (million dollars)
			Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)				
3499	<b>Fabricated metal products, n.e.c.—Con.</b> Powder metallurgy parts: Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	104	6.1	114.8	4.5	8.6	73.9	200.6	194.3	402.8	13.2
34996		92	4.6	82.7	3.5	6.7	55.2	154.9	128.9	287.6	10.9
34998	<b>All other fabricated metal products, n.e.c.:</b> Establishments with this product class primary ----- Establishments with 75 percent specialization or more in class -----	894	34.3	590.5	25.7	49.9	374.9	1 155.6	1 037.2	2 218.5	66.2
		783	27.9	477.9	21.0	40.9	304.0	926.3	840.1	1 783.9	57.4

Note: For qualifications of data, see footnotes on table 1a.

**Table 5b. Industry-Product Analysis—Value of Shipments and Primary Product Shipments, Specialization and Coverage Ratios for the Industry: 1982 and Earlier Census Years**

[An establishment is assigned to an industry based on shipment values of products representing largest amount considered primary to an industry. Frequently, establishment shipments comprise mixtures of products assigned to an industry (primary), those considered primary to other industries (secondary), and receipts for activities such as merchandising or contract work. Columns A-D show this product pattern for an industry, and column E shows primary product specialization ratio. The extent to which an industry's primary products are shipped by establishments classified in and out of an industry is shown in columns F-H and coverage ratio is shown in column I. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Industry and product group code	Industry and census year	Value of shipments					Value of primary product shipments				
		Total (million dollars)	Primary products (million dollars)	Secondary products (million dollars)	Miscellaneous receipts (million dollars)	Primary product specialization ratio Col. B ÷ Col. B + C (percent)	Total made in all industries (million dollars)	Made in this industry (million dollars)	Made in other industries (million dollars)	Coverage ratio Col. B ÷ Col. F (percent)	
											A
3493	Steel springs, except wire -----	1982..	413.5	300.1	71.5	42.0	81	511.3	300.1	211.2	59
		1977..	500.5	412.2	79.0	9.3	84	571.0	412.2	158.0	72
		1972..	331.4	264.8	60.6	6.0	81	361.8	264.8	97.0	73
3494	Valves and pipe fittings -----	1982..	9 039.9	7 796.1	851.0	392.7	90	8 705.1	7 796.1	908.9	90
		1977..	5 662.3	4 743.7	592.1	326.5	89	5 403.0	4 743.7	659.3	88
		1972..	2 956.9	2 485.1	285.3	186.5	90	2 891.6	2 485.1	406.5	86
3495	Wire springs -----	1982..	1 104.3	994.8	81.4	28.0	92	1 064.2	994.8	69.4	93
		1977..	957.7	857.6	77.6	22.5	92	933.0	857.6	75.4	92
		1972..	611.9	528.4	72.4	11.1	88	566.1	528.4	37.7	93
3496	Miscellaneous fabricated wire products -----	1982..	2 357.3	2 103.1	151.1	103.1	93	4 040.8	2 335.1	1 705.7	52
		1977..	1 435.0	1 248.2	123.5	63.3	91	3 336.7	1 248.2	2 088.5	37
		1972..	959.7	836.4	62.7	60.6	93	2 110.0	836.4	1 274.6	39
3497	Metal foil and leaf -----	1982..	1 831.3	1 433.7	340.6	57.0	81	1 758.0	1 433.7	324.3	82
		1977..	877.5	672.8	171.9	32.8	80	1 070.3	672.8	397.5	63
		1972..	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
3498	Fabricated pipe and fittings -----	1982..	3 115.8	2 865.7	97.1	153.0	97	3 035.3	2 865.7	169.7	94
		1977..	1 872.7	1 584.4	99.0	189.3	94	1 698.1	1 584.4	113.6	93
		1972..	704.4	605.2	35.4	63.8	94	670.5	605.2	65.3	90
3499	Fabricated metal products, n.e.c. -----	1982..	4 406.0	3 674.1	323.2	408.6	92	4 210.9	3 674.1	536.8	87
		1977..	3 429.2	2 821.1	338.2	269.9	89	3 390.3	2 821.1	569.2	83
		1972..	1 938.6	1 570.5	191.2	176.9	89	2 131.8	1 570.5	561.3	74

\*Minimum percentage; exact percentage withheld to avoid disclosing data for individual companies.

\*Relationships are not meaningful because of predominance of miscellaneous receipts, particularly receipts for contract and commission work on materials owned by others.



**Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982**

(Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least \$2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than \$5 million of products primary to this chapter. For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

1982 product code	Product group, product class, and miscellaneous receipts	All industries	Steel springs, except wire (SIC 3493)	Valves and pipe fittings (SIC 3494)	Wire springs (SIC 3495)	Miscel- laneous fabricated wire products (SIC 3496)	Metal foil and leaf (SIC 3497)	Fabricated pipe and fittings (SIC 3498)	Fabricated metal products, n.e.c. (SIC 3499)	Other industries
	<b>Total</b> -----	(X) 413.5	9 039.9	1 104.3	2 357.3	1 831.3	3 115.8	4 406.0	(X)	
	<b>Primary products</b> -----	(X) 300.1	7 796.1	994.8	2 103.1	1 433.7	2 865.7	3 674.1	(X)	
	<b>Secondary products</b> -----	(X) 71.5	851.0	81.4	151.1	340.6	97.1	323.2	(X)	
	<b>Miscellaneous receipts</b> -----	(X) 42.0	392.7	28.0	103.1	57.0	153.0	408.6	(X)	
3493-	<b>Steel springs, except wire</b> -----	511.3	300.1	-	32.5	-	-	(D)	(D)	
34931	Hot formed springs-----	395.8	216.6	(D)	-	-	-	-	(D)	
34932	Cold formed springs-----	94.8	62.8	(D)	-	-	-	(D)	(D)	
34930	Steel springs, except wire, n.s.k.-----	20.8	20.7	(D)	-	-	-	-	-	
3494-	<b>Valves and pipe fittings</b> -----	8 705.1	-	7 796.1	(D)	(D)	-	15.1	(D)	
34944	Plumbing and heating valves and specialties-----	220.2	-	(D)	-	-	-	(D)	-	
34945	Metal fittings, flanges, and unions for piping systems-----	1 491.2	-	1 386.8	(D)	-	-	(D)	-	
34947	Automatic regulating and control valves-----	1 233.0	-	1 041.7	-	-	-	-	191.3	
34948	Solenoid valves-----	206.1	-	187.9	-	-	-	-	18.2	
34949	Nuclear valves-----	152.0	-	(D)	-	-	-	-	(D)	
3494A	Industrial valves-----	3 273.5	-	3 062.2	-	(D)	-	(D)	(D)	
3494B	Hydraulic valves, except aerospace type-----	435.3	-	282.0	-	-	-	-	153.3	
3494C	Pneumatic valves, except aerospace type-----	339.2	-	322.0	-	-	-	-	17.2	
3494D	Aerospace type hydraulic and pneumatic valves-----	262.2	-	160.1	-	-	-	-	102.1	
3494E	Fittings for metal and plastics tubing used in fluid power systems, except aerospace type-----	302.7	-	293.3	-	-	-	-	9.4	
3494F	Hydraulic and pneumatic hose or tube end fittings and assemblies, except aerospace type-----	319.7	-	299.3	-	-	-	-	20.4	
3494G	Aerospace type hydraulic and pneumatic hose or tube end fittings-----	119.0	-	113.4	-	-	-	-	5.6	
3494H	Parts for fluid power valves-----	101.0	-	89.7	-	-	-	-	11.4	
34940	Valves and pipe fittings, n.s.k.-----	250.0	-	216.1	-	-	-	(D)	(D)	
3495-	<b>Wire springs</b> -----	1 064.2	37.8	-	994.8	(D)	-	-	(D)	
34952	Precision mechanical springs-----	480.7	34.9	-	435.7	-	-	-	10.1	
34953	Other wire springs-----	534.8	2.9	-	512.4	(D)	-	-	(D)	
34950	Wire springs, n.s.k.-----	48.7	-	-	46.8	(D)	-	-	(D)	
3496-	<b>Miscellaneous fabricated wire products</b> -----	2 335.1	(D)	-	7.4	2 103.1	-	(D)	3.3	
34961	Noninsulated ferrous wire rope, cable, etc., not produced by wire drawers (also see code 33151)-----	391.4	(D)	-	5.7	351.7	-	(D)	27.8	
34964	Ferrous wire cloth and other woven wire products, not produced by wire drawers (also see code 33157)-----	204.4	-	-	-	179.8	-	-	(D)	
34965	Nonferrous wire cloth and other woven wire products, not produced by wire drawers (also see code 33575)-----	81.6	-	-	-	(D)	-	-	(D)	
34966	Fence and fence gates, not produced by wire drawers (also see code 33156)-----	145.1	-	-	-	135.2	-	-	9.9	
34967	Steel nails and spikes, not made by wire drawers (also see code 33152)-----	206.6	-	-	-	165.9	-	-	40.7	
34968	Other fabricated wire products, not produced by wire drawers (also see code 33159)-----	1 089.6	-	-	(D)	(D)	-	-	2.6	
34960	Miscellaneous fabricated wire products, n.s.k.-----	216.5	-	-	(D)	210.1	-	-	(D)	
3497-	<b>Metal foil and leaf</b> -----	1 758.0	-	-	-	(D)	1 433.7	-	-	
34971	Converted unmounted aluminum foil packaging products-----	654.5	-	-	-	-	(D)	-	-	
34972	Laminated aluminum foil flexible packaging-----	775.5	-	-	-	-	528.7	-	-	
34973	Converted foil for nonpackaging applications-----	324.4	-	-	-	(D)	(D)	-	-	
34970	Metal leaf and foil, n.s.k.-----	3.6	-	-	-	-	3.6	-	-	
34980	<b>Fabricated pipe and pipe fittings</b> -----	3 035.3	-	73.1	-	-	-	2 865.7	16.2	
3499-	<b>Fabricated metal products, n.e.c.</b> -----	4 210.9	(D)	15.4	(D)	(D)	-	(D)	3 674.1	
34991	Safes and vaults-----	282.6	-	-	-	-	-	-	279.2	
34992	Collapsible tubes-----	84.7	-	(D)	-	(D)	-	(D)	80.3	
34993	Flat metal strapping-----	271.6	-	(D)	-	(D)	-	-	260.6	
34995	Metal ladders-----	152.0	-	-	-	-	-	(D)	142.2	
34996	Powder metallurgy parts-----	441.3	-	-	-	(D)	-	(D)	352.0	
34998	All other fabricated metal products, n.e.c.-----	2 277.1	(D)	(D)	5.8	6.2	-	5.2	1 899.2	
34990	Fabricated metal products, n.e.c., n.s.k.-----	701.5	-	(D)	(D)	(D)	-	.4	660.7	
<b>OTHER SHIPMENTS BY FOUR-DIGIT PRODUCT GROUP</b>										
2499-	Wood products, n.e.c.-----	(X)	-	-	-	-	-	-	7.9	(X)
2511-	Wood household furniture-----	(X)	-	-	(D)	(D)	-	-	(D)	(X)
2514-	Metal household furniture-----	(X)	-	-	(D)	(D)	-	(D)	12.3	(X)
2522-	Metal office furniture-----	(X)	-	-	-	-	-	-	32.6	(X)
2542-	Metal partitions and fixtures-----	(X)	-	(D)	-	(D)	-	(D)	6.9	(X)
2641-	Coated and glazed paper-----	(X)	-	-	-	-	52.2	-	-	(X)
2643-	Bags, except textile bags-----	(X)	-	-	-	-	23.1	-	-	(X)
2645-	Die-cut paper and board-----	(X)	-	-	-	-	(D)	-	-	(X)
2651-	Folding paperboard boxes-----	(X)	-	-	-	-	(D)	-	-	(X)
2652-	Setup paperboard boxes-----	(X)	-	-	-	-	-	-	(D)	(X)
2754-	Commercial printing, gravure-----	(X)	-	-	-	-	78.2	-	-	(X)
2813-	Industrial gases-----	(X)	-	2.4	-	-	-	-	-	(X)
2891-	Adhesives and sealants-----	(X)	-	-	-	-	(D)	(D)	(D)	(X)
2899-	Chemical preparations, n.e.c.-----	(X)	-	(D)	-	(D)	(D)	-	(D)	(X)
3041-	Rubber and plastics hose and belting-----	(X)	-	(D)	-	-	-	-	-	(X)
3079-	Miscellaneous plastics products-----	(X)	-	4.4	-	5.0	(D)	(D)	32.9	(X)
3172-	Personal leather goods, n.e.c.-----	(X)	-	-	-	-	-	-	(D)	(X)
3264-	Porcelain electrical supplies-----	(X)	-	-	-	-	-	-	(D)	(X)
3291-	Abrasive products-----	(X)	-	-	-	(D)	-	-	-	(X)

See footnotes at end of table.



**Table 5c-1. Industry-Product Analysis—Shipments by Product Class and Industry: 1982—Con.**

[Million dollars. Table shows where products of an industry (referred to as primary and listed in table 6a) are made and what products are made by establishments classified in an industry. Read down an industry column to find what products are produced in an industry. Only those product groups that have at least \$2 million in shipments from establishments classified in one of industries included in this chapter are shown. Read across to determine where products of industries in this chapter are produced. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column. Specified "Other industries" are listed in table 5c-2 if they account for more than \$5 million of products primary to this chapter. For meaning of abbreviations and symbols, see explanatory text. For explanation of terms, see appendixes]

1982 product code	Product group, product class, and miscellaneous receipts	All industries	Steel springs, except wire (SIC 3493)	Valves and pipe fittings (SIC 3494)	Wire springs (SIC 3495)	Miscel- laneous fabricated wire products (SIC 3496)	Metal foil and leaf (SIC 3497)	Fabricated pipe and fittings (SIC 3498)	Fabricated metal products, n.e.c. (SIC 3499)	Other industries
<b>OTHER SHIPMENTS BY FOUR-DIGIT PRODUCT GROUP—Con.</b>										
3293-	Gaskets, packing, and sealing devices .....	(X)	-	6.6	-	(D)	-	(D)	(D)	(X)
3315-	Steel wire and related products .....	(X)	-	-	-	(D)	-	(D)	1.7	(X)
3316-	Cold finishing of steel shapes .....	(X)	-	(D)	-	-	-	-	-	(X)
3321-	Gray iron castings .....	(X)	-	31.9	-	-	-	-	(D)	(X)
3322-	Malleable iron castings .....	(X)	-	(D)	-	-	-	-	-	(X)
3353-	Aluminum sheet, plate, and foil .....	(X)	-	-	-	-	(D)	-	-	(X)
3362-	Brass, bronze, and copper castings .....	(X)	-	(D)	-	-	-	-	-	(X)
3398-	Metal heat treating .....	(X)	-	-	-	-	-	(D)	(D)	(X)
3399-	Primary metal products, n.e.c. ....	(X)	-	-	-	(D)	-	-	(D)	(X)
3423-	Hand and edge tools, n.e.c. ....	(X)	(D)	(D)	-	2.9	-	-	8.2	(X)
3429-	Hardware, n.e.c. ....	(X)	(D)	3.4	(D)	.6	-	-	2.7	(X)
3433-	Heating equipment, except electric .....	(X)	-	(D)	-	(D)	-	-	(D)	(X)
3441-	Fabricated structural metal .....	(X)	-	-	-	(D)	-	(D)	1.6	(X)
3442-	Metal doors, sash, and trim .....	(X)	-	-	-	(D)	-	-	-	(X)
3443-	Fabricated plate work (boiler shops) .....	(X)	-	(D)	-	(D)	-	6.1	7.1	(X)
3444-	Sheet metal work .....	(X)	-	(D)	(D)	(D)	-	(D)	5.9	(X)
3446-	Architectural and ornamental metal work .....	(X)	-	-	-	1.7	-	-	2.3	(X)
3449-	Miscellaneous metal work .....	(X)	-	-	-	-	-	6.6	13.9	(X)
3451-	Screw machine products .....	(X)	-	6.2	(D)	(D)	-	-	-	(X)
3452-	Bolts, nuts, rivets, and washers .....	(X)	(D)	(D)	-	3.2	-	(D)	(D)	(X)
3462-	Iron and steel forgings .....	(X)	-	34.7	-	(D)	-	-	(D)	(X)
3465-	Automotive stampings .....	(X)	(D)	-	(D)	(D)	-	-	-	(X)
3466-	Crowns and closures .....	(X)	-	-	-	-	-	-	(D)	(X)
3469-	Metal stampings, n.e.c. ....	(X)	3.0	4.1	16.1	(D)	-	(D)	6.9	(X)
3471-	Plating and polishing .....	(X)	-	(D)	-	(D)	-	-	(D)	(X)
3479-	Metal coating and allied services .....	(X)	-	-	-	1.0	-	(D)	(D)	(X)
3531-	Construction machinery .....	(X)	-	-	-	-	-	-	(D)	(X)
3533-	Oil field machinery .....	(X)	-	40.5	-	-	-	(D)	(D)	(X)
3535-	Conveyors and conveying equipment .....	(X)	-	(D)	-	(D)	-	-	9.6	(X)
3537-	Industrial trucks and tractors .....	(X)	-	-	-	-	-	-	2.9	(X)
3542-	Machine tools, metal forming types .....	(X)	-	6.9	-	(D)	(D)	-	-	(X)
3544-	Special dies, tools, jigs, and fixtures .....	(X)	(D)	(D)	.8	(D)	-	-	3.5	(X)
3545-	Machine tool accessories .....	(X)	-	4.1	-	-	(D)	-	(D)	(X)
3546-	Power driven hand tools .....	(X)	-	(D)	-	(D)	-	-	-	(X)
3549-	Metalworking machinery, n.e.c. ....	(X)	-	(D)	-	-	-	-	(D)	(X)
3552-	Textile machinery .....	(X)	-	-	-	-	-	-	(D)	(X)
3554-	Paper industries machinery .....	(X)	-	-	-	(D)	-	-	-	(X)
3561-	Pumps and pumping equipment .....	(X)	-	47.3	-	-	-	(D)	(D)	(X)
3564-	Blowers and fans .....	(X)	-	(D)	-	(D)	-	-	(D)	(X)
3566-	Speed changers, drives, and gears .....	(X)	-	(D)	-	-	-	-	(D)	(X)
3567-	Industrial furnaces and ovens .....	(X)	-	(D)	-	-	-	(D)	(D)	(X)
3568-	Power transmission equipment, n.e.c. ....	(X)	-	(D)	-	(D)	-	-	8.7	(X)
3569-	General industrial machinery, n.e.c. ....	(X)	-	35.7	-	1.8	-	-	3.1	(X)
3579-	Office machines, n.e.c., and typewriters .....	(X)	-	(D)	-	(D)	-	-	-	(X)
3585-	Refrigeration and heating equipment .....	(X)	-	11.9	-	-	-	-	3.0	(X)
3586-	Measuring and dispensing pumps .....	(X)	-	(D)	-	-	-	-	-	(X)
3589-	Service industry machinery, n.e.c. ....	(X)	-	(D)	-	(D)	-	-	(D)	(X)
3592-	Carburetors, pistons, rings, and valves .....	(X)	-	(D)	-	-	-	-	-	(X)
3599-	Machinery, except electrical, n.e.c. ....	(X)	-	79.7	(D)	(D)	-	.4	5.7	(X)
3613-	Switchgear and switchboard apparatus .....	(X)	-	(D)	-	-	-	-	-	(X)
3621-	Motors and generators .....	(X)	-	(D)	-	-	-	-	-	(X)
3622-	Industrial controls .....	(X)	-	37.4	(D)	(D)	-	-	(D)	(X)
3623-	Welding apparatus, electric .....	(X)	-	-	-	(D)	-	-	-	(X)
3644-	Noncurrent-carrying wiring devices .....	(X)	-	(D)	-	(D)	-	-	(D)	(X)
3648-	Lighting equipment, n.e.c. ....	(X)	-	(D)	-	-	-	-	(D)	(X)
3662-	Radio and TV communication equipment .....	(X)	-	2.1	-	-	-	-	(D)	(X)
3679-	Electronic components, n.e.c. ....	(X)	-	(D)	-	2.9	-	-	(D)	(X)
3714-	Motor vehicle parts and accessories .....	(X)	(D)	(D)	-	(D)	-	(D)	.9	(X)
3724-	Aircraft engines and engine parts .....	(X)	-	17.5	-	-	-	-	(D)	(X)
3728-	Aircraft equipment, n.e.c. ....	(X)	-	9.4	-	-	-	-	(D)	(X)
3743-	Railroad equipment .....	(X)	-	(D)	-	-	-	-	(D)	(X)
3799-	Transportation equipment, n.e.c. ....	(X)	(D)	-	-	(D)	-	-	(D)	(X)
3811-	Engineering and scientific instruments .....	(X)	-	4.4	-	-	-	-	-	(X)
3822-	Environmental controls .....	(X)	-	(D)	-	1.2	-	-	-	(X)
3823-	Process control instruments .....	(X)	-	156.8	-	-	-	(D)	-	(X)
3824-	Fluid meters and counting devices .....	(X)	-	(D)	-	-	-	(D)	(D)	(X)
3949-	Sporting and athletic goods, n.e.c. ....	(X)	-	(D)	-	(D)	-	-	(D)	(X)
3999-	Manufacturing industries, n.e.c. ....	(X)	-	(D)	-	(D)	-	-	-	(X)
<b>MISCELLANEOUS RECEIPTS</b>										
93000 00	Receipts for work done for others on their materials .....	(X)	(D)	14.1	.3	6.8	(D)	11.1	(D)	(X)
99980 13	Sales of scrap and refuse .....	(X)	(D)	20.3	.7	2.1	23.1	3.8	5.1	(X)
99980 61	Receipts for repair work .....	(X)	-	20.5	-	-	-	2.4	(D)	(X)
99980 98	Other miscellaneous receipts, including receipts for repair work, etc. ....	(X)	2.9	33.5	1.3	10.8	(D)	13.4	85.9	(X)
99989 00	Sales of products bought and resold without further manufacture, processing, or assembly at establishment .....	(X)	37.3	304.4	25.6	83.4	27.7	122.2	164.3	(X)



**Table 5c-2. Industry-Product Analysis—Other Industries With Shipments of Primary Products: 1982**

[Million dollars. Table is a continuation of table 5c-1 and shows where products of industries in this chapter (referred to as primary products and listed in table 6a) are made. To extent that some of primary products are made in industries not included in this chapter, value of such shipments is shown in "Other industries" column of table 5c-1. Specified "Other industries" are listed in this table if they account for more than \$5 million of products primary to this chapter. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Other industries	Value	1982 product code	Other industries	Value
<b>3493-</b>	<b>STEEL SPRINGS, EXCEPT WIRE</b>		<b>3496-</b>	<b>MISCELLANEOUS FABRICATED WIRE PRODUCTS—Con.</b>	
	3714 Motor vehicle parts and accessories .....	175.7		3423 Hand and edge tools, n.e.c. ....	(D)
				3429 Hardware, n.e.c. ....	18.3
<b>3494-</b>	<b>VALVES AND PIPE FITTINGS</b>			3441 Fabricated structural metal .....	(D)
	3041 Rubber and plastics hose and belting .....	(D)		3448 Prefabricated metal buildings .....	(D)
	3321 Gray iron foundries .....	(D)		3449 Miscellaneous metal work .....	7.7
	3351 Copper rolling and drawing .....	(D)		3469 Metal stampings, n.e.c. ....	12.0
	3429 Hardware, n.e.c. ....	5.4		3532 Mining machinery .....	(D)
	3432 Plumbing fittings and brass goods .....	6.2		3579 Office machines, n.e.c., and typewriters .....	(D)
			<b>3497-</b>	<b>METAL FOIL AND LEAF</b>	
	3433 Heating equipment, except electric .....	18.8		2295 Coated fabrics, not rubberized .....	(D)
	3443 Fabricated plate work (boiler shops) .....	12.7		2641 Paper coating and glazing .....	105.0
	3444 Sheet metal work .....	(D)		2649 Converted paper products, n.e.c. ....	21.9
	3451 Screw machine products .....	7.4		2751 Commercial printing, letterpress .....	6.6
	3462 Iron and steel forgings .....	(D)		2754 Commercial printing, gravure .....	15.8
				3079 Miscellaneous plastics products .....	5.1
	3463 Nonferrous forgings .....	(D)		3353 Aluminum sheet, plate, and foil .....	105.6
	3511 Turbines and turbine generator sets .....	(D)		3411 Metal cans .....	(D)
	3519 Internal combustion engines, n.e.c. ....	(D)		3569 General industrial machinery, n.e.c. ....	(D)
	3533 Oil field machinery .....	141.2	<b>3498-</b>	<b>FABRICATED PIPE AND FITTINGS</b>	
	3551 Food products machinery .....	(D)		3433 Heating equipment, except electric .....	(D)
				3444 Sheet metal work .....	(D)
	3559 Special industry machinery, n.e.c. ....	(D)		3533 Oil field machinery .....	21.8
	3561 Pumps and pumping equipment .....	120.7	<b>3499-</b>	<b>FABRICATED METAL PRODUCTS, N.E.C.</b>	
	3563 Air and gas compressors .....	16.0		2499 Wood products, n.e.c. ....	5.2
	3569 General industrial machinery, n.e.c. ....	8.2		2514 Metal household furniture .....	(D)
	3589 Service industry machinery, n.e.c. ....	(D)		2522 Metal office furniture .....	(D)
				2899 Chemical preparations, n.e.c. ....	(D)
	3599 Machinery, except electrical, n.e.c. ....	88.0		3069 Fabricated rubber products, n.e.c. ....	(D)
	3613 Switchgear and switchboard apparatus .....	(D)		3079 Miscellaneous plastics products .....	15.4
	3644 Noncurrent-carrying wiring devices .....	(D)		3293 Gaskets, packing, and sealing devices .....	8.0
	3662 Radio and TV communication equipment .....	(D)		3312 Blast furnaces and steel mills .....	(D)
	3714 Motor vehicle parts and accessories .....	18.1		3399 Primary metal products, n.e.c. ....	42.3
				3411 Metal cans .....	(D)
	3724 Aircraft engines and engine parts .....	10.4		3423 Hand and edge tools, n.e.c. ....	(D)
	3728 Aircraft equipment, n.e.c. ....	23.1		3429 Hardware, n.e.c. ....	17.0
	3811 Engineering and scientific instruments .....	(D)		3441 Fabricated structural metal .....	21.3
	3822 Environmental controls .....	32.5		3443 Fabricated plate work (boiler shops) .....	8.9
	3823 Process control instruments .....	37.4		3469 Metal stampings, n.e.c. ....	12.9
	3824 Fluid meters and counting devices .....	(D)		3531 Construction machinery .....	(D)
	3829 Measuring and controlling devices, n.e.c. ....	16.0		3585 Refrigeration and heating equipment .....	(D)
<b>3495-</b>	<b>WIRE SPRINGS</b>			3592 Carburetors, pistons, rings, and valves .....	(D)
	3469 Metal stampings, n.e.c. ....	9.2		3599 Machinery, except electrical, n.e.c. ....	12.5
<b>3496-</b>	<b>MISCELLANEOUS FABRICATED WIRE PRODUCTS</b>			3613 Switchgear and switchboard apparatus .....	(D)
	2782 Blankbooks and looseleaf binders .....	(D)		3679 Electronic components, n.e.c. ....	(D)
	3011 Tires and inner tubes .....	(D)		3691 Storage batteries .....	(D)
	3079 Miscellaneous plastics products .....	24.1		3699 Electrical equipment and supplies, n.e.c. ....	(D)
				3714 Motor vehicle parts and accessories .....	9.7
				3841 Surgical and medical instruments .....	(D)
				3914 Silverware and plated ware .....	(D)



**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
	<b>STEEL SPRINGS, EXCEPT WIRE</b>						
3493- —	<b>Total</b> -----	(NA)	(X)	511.3	(NA)	(X)	571.0
34931 —	Hot formed springs -----	(NA)	(X)	395.8	(NA)	(X)	454.2
	Hot formed, helical springs, hot wound:						
	Automobile coil springs:						
34931 05	Shipments for domestic replacement and shipments for export, including shipments to U.S. motor vehicle manufacturers for resale ----- 1,000 s tons--	11	(S)	29.5	7	**32.4	34.1
34931 06	Shipments to U.S. motor vehicle manufacturers or their suppliers for use in original equipment ----- do--	5	(S)	161.3	8	(S)	135.6
34931 16	Locomotive and railroad car and other helical springs, hot wound ----- do--	6	*24.8	34.7	6	55.2	47.2
	Hot formed leaf springs:						
	Automotive (auto, truck, bus, trailer, etc.):						
34931 55	Shipments for domestic replacement and shipments for export, including shipments to U.S. motor vehicle manufacturers for resale ----- do--	13	52.3	57.8	(NA)	(S)	( <sup>3</sup> )
	Shipments to U.S. motor vehicle manufacturers or their suppliers for use in original equipment:						
34931 56	Auto ----- do--	4	*106.0	73.0	5 10	191.8	157.8
34931 58	Truck, bus, trailer, etc. ----- do--	11					
34931 63	Leaf springs for tractors, farm equipment, locomotive and railroad cars, and other heavy equipment ----- do--	1	(D)	( <sup>4</sup> )	6	(S)	10.9
34931 98	Other hot formed steel springs (including torsion bar springs) ----- do--	23	(S)	38.3	(NA)	(S)	368.4
34931 00	Hot formed springs, n.s.k. -----	(NA)	(X)	41.2	(NA)	(X)	.2
	Cold formed springs:						
34932 —	Cold formed flat springs made of sheet and strip ----- 1,000 s tons--	44	(S)	94.8	36	(S)	94.3
34930 00	Steel springs, except wire, n.s.k., typically for establishments with 5 employees or more (see note) -----	(NA)	(X)	4.4	(NA)	(X)	3.8
34930 02	Steel springs, except wire, n.s.k., typically for establishments with less than 5 employees (see note) -----	(NA)	(X)	16.4	(NA)	(X)	18.7
	<b>VALVES AND PIPE FITTINGS</b>						
3494- —	<b>Total</b> -----	(NA)	(X)	8 705.1	(NA)	(X)	5 403.0
34944 —	Plumbing and heating valves and specialties, except plumbers' brass goods -----	(NA)	(X)	220.2	(NA)	(X)	206.6
34944 11	Gates, globes, angles, straightway (Y-type) checks, stop and check, cross, 3- and 4-way drain, etc., brass and bronze (less than 125 lb w.s.p.) ----- 1,000 s tons--	26	**166.6	101.5	25	(S)	83.4
34944 19	Other metal plumbing and heating valves and specialties, including steam traps, pop safety valves, and relief valves (15 lb w.s.p. or less) ----- do--	28	(S)	115.0	22	(S)	117.1
34944 00	Plumbing and heating valves and specialties, except plumbers' brass goods, n.s.k. -----	(NA)	(X)	3.7	(NA)	(X)	6.1
34945 —	Metal fittings, flanges, and unions for piping systems -----	(NA)	(X)	1 491.2	(NA)	(X)	1 018.8
34945 11	Gray iron fittings, flanges, and unions (not for cast iron pipe) ----- 1,000 s tons--	12	*19.0	51.2	10	*25.8	28.0
	Malleable iron:						
34945 13	Fittings and flanges, including couplings, reducers, caps, etc. ----- do--	27	81.9	179.4	20	*81.1	124.5
34945 15	Unions and union fittings ----- do--	13	16.3	65.8	10	19.4	39.8
	Copper, brass, or bronze, including solder and threaded types:						
34945 18	Cast bronze or bronze fittings, flanges, and unions ----- mil lb--	23	*56.2	129.1	14	28.1	75.4
34945 19	Wrought copper and wrought copper alloy fittings, flanges, and unions ----- do--	16	**51.6	123.0	10	64.0	127.6
34945 21	Cast carbon and alloy steel fittings, flanges, and unions ----- 1,000 s tons--	7	(S)	35.0	10	(S)	18.2
	Forged carbon, alloy, and stainless steel:						
34945 23	Fittings, unions, and flanges, socket-weld or threaded type ----- do--	36	**31.0	128.8	(NA)	**42.8	163.2
	Flanges, butt-welding type:						
34945 32	Carbon steel ----- do--	23	*123.9	105.7	(NA)	**83.6	80.0
34945 34	Alloy steel ----- do--	8	(S)	27.8			
34945 37	Stainless steel ----- do--	10	4.2	26.6			
	Fittings, butt-welding type:						
34945 42	Carbon steel ----- do--	14	35.5	157.2	(NA)	**53.6	129.4
34945 44	Alloy steel ----- do--	6	(S)	5.6			
34945 47	Stainless steel ----- do--	7	*1.9	10.8			
34945 71	Pipe hangers and supports (not including metal framing) -----	17	(NA)	164.2	11	(NA)	100.4
34945 85	Pipe couplings ----- 1,000 s tons--	26	42.6	102.0	4		
34945 98	All other metal fittings and unions including ductile iron and aluminum, for piping system (including metal framing and fittings for mechanical and electrical supports) ----- do--	53	(S)	156.5	30	*60.0	123.1
34945 00	Metal fittings, flanges, and unions for piping systems, n.s.k. -----	(NA)	(X)	22.6	(NA)	(X)	9.2

See footnotes at end of table.



**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
	<b>VALVES AND PIPE FITTINGS—Con.</b>						
34947 — 34947 00	Automatic regulating and control valves: Automatic regulating and control valves—power operated valves designed for modulating (throttling) service (excluding power-operated on/off valves): As reported in the census of manufactures ----- As reported in the Current Industrial Report MA-38B, Selected Instruments and Related Products ----- Engineered specification valves, designed to perform a precise degree of continuous modulation of controlled variables as final element of a sophisticated instrumentation loop. (commonly referred to as control valves and including certain globe, butterfly, ball, diaphragm, and similar body types):	154 (NA)	(X) (X)	1 233.0 1 184.5	91 (NA)	(X) (X)	696.1 5703.3
34947 05	Pneumatic actuated ----- thousands--	(NA)	3 086.5	429.2	(NA)	1 858.4	267.0
34947 10	Electric actuated ----- do--	(NA)	2 211.3	71.6	(NA)	1 457.9	57.1
34947 15	Electro-hydraulic actuated ----- do--	(NA)	6174.1	73.1	(NA)	136.6	16.4
34947 19	Other ----- do--	(NA)	2 429.6	111.1	(NA)	4 301.6	63.3
	Regulator valves equipped with self-generating power actuator acting in response and in proportion to a change in value of controlled variable, such as temperature, pressure, flow level, etc.:						
34947 25	Remote-sensing direct actuated temperature regulators ----- do--	(NA)	2 484.5	35.3	(NA)	601.0	22.1
34947 30	Self-contained direct actuated pressure regulators (except instrument type and safety relief valves) ----- do--	(NA)	7 408.4	148.2	(NA)	3 361.4	98.9
34947 35	Pilot (internal and external) actuated pressure regulators ----- do--	(NA)	136.3	38.7	(NA)	194.1	27.8
34947 41	Self-contained direct acting precision and instrument type pneumatic (air and gas) pressure regulators ----- do--	(NA)	227.9	12.6	(NA)	1 326.8	18.4
34947 45	Flow regulators for gas, vapors, or liquids ----- do--	(NA)	6 976.4	101.9	(NA)	14 314.4	84.1
34947 48	Other regulator valves ----- do--	(NA)	2 554.0	87.0	(NA)	3 044.0	48.2
34947 98	Parts and components for automatic regulating and control valves (sold separately) -----	(NA)	(X)	76.0	(NA)	(NA)	(NA)
34947 0A	Automatic regulating and control valves, n.s.k. -----	(NA)	(X)	-	(NA)	(NA)	(NA)
34948 — 34948 00	Solenoid valves: Solenoid valves of the type actuated by movement of a plunger or armature due to magnetic field created by electrically energizing a solenoid coil (excluding torque motor rotary type actuated valves, servovalves, and fluid power hydraulic and pneumatic solenoid valves): As reported in the census of manufactures ----- As reported in the Current Industrial Report MA-38B, Selected Instruments and Related Products ----- Solenoid valves, except power transfer valves: Commercial/industrial types:	39 (NA)	(X) (X)	206.1 201.5	27 (NA)	(X) (X)	114.8 5137.9
34948 56	Two-way ----- thousands--	(NA)	3 419.6	99.4	(NA)	19 082.2	137.9
34948 58	Three-way ----- do--	(NA)	950.0	22.1			
34948 59	Other ----- do--	(NA)	( <sup>6</sup> )	( <sup>6</sup> )			
34948 61	Household appliance type ----- do--	(NA)	612 957.2	651.5			
34948 79	Parts, components, and operators for solenoid valves, except power transfer valves (sold separately) -----	(NA)	(X)	28.5	(NA)	(NA)	(NA)
34948 0A	Solenoid valves, n.s.k. -----	(NA)	(X)	-	(NA)	(NA)	(NA)
34949 —	Nuclear valves -----	(NA)	(X)	152.0	26	(S)	140.7
	Gate, globe, and check valves:						
34949 11	Cast-carbon steel and low alloy ----- thousands--	8	(S)	24.0	(NA)	(NA)	140.7
34949 13	Forged-carbon steel and low alloy ----- do--	10	(S)	44.6			
34949 15	Corrosion-resistant alloy steel ----- do--	9	**37.5	23.8			
34949 21	Ball valves (on/off only) ----- do--	2	( <sup>7</sup> )	( <sup>7</sup> )	(NA)	(NA)	140.7
34949 23	Butterfly valves (on/off only) ----- do--	4	( <sup>7</sup> )	( <sup>7</sup> )			
34949 25	Plug valves (on/off only) ----- do--	2	(S)	710.2			
34949 31	Actuators (mounted, power-operated on/off) ----- do--	10	(S)	13.3			
34949 39	Automated control valves ----- do--	4	*103.9	9.9			
34949 98	Parts -----	15	(X)	26.1			
34949 00	Nuclear valves, n.s.k. -----	(NA)	(X)	-	(NA)	(X)	( <sup>8</sup> )
3494A —	Industrial valves -----	(NA)	(X)	3 273.5	(NA)	(NA)	1 972.7
	Gates, globes, angles, straightway (Y-type), checks, stop and check, cross, 3- and 4-way, etc. (including manual and power operated on/off valves, but excluding automatic valves and water works):						
3494A 11	Iron body, including ductile or modular all pressures (excluding IBBM, AWWA,UL) ----- 1,000 s tons--	22	**76.1	96.6	26	(S)	98.8
3494A 12	Carbon steel:						
3494A 13	Cast ----- do--	37	**104.8	382.2	28	*35.9	188.3
3494A 14	Forged ----- do--	26	**20.5	177.9	13	12.9	87.3
3494A 15	Alloy steel and other metals ----- do--	42	(S)	155.4	38	(S)	250.4
3494A 16	Brass and bronze (125 lb w.s.p. or more) ----- do--	31	30.7	177.5	31	**23.4	182.3
3494A 17	Actuators (power operated on/off mounted) ----- do--	10	**2.6	10.3	(NA)	(NA)	( <sup>9</sup> )
3494A 19	Parts -----	21	(X)	35.6	(NA)	(NA)	( <sup>9</sup> )

See footnotes at end of table.



Table 6a-1. **Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
	<b>VALVES AND PIPE FITTINGS—Con.</b>						
3494A —	Industrial valves —Con.						
	Water works and municipal equipment (IBBM, AWWA, and UL):						
3494A 21	IBBM gate line and tapping valves ----- 1,000 s tons--	13	69.9	162.3	(NA)	(10)	(10)
3494A 22	UL Valves (all pressures):						
	Check valves ----- do--	5	(S)	7.2			
3494A 23	All others, including pest indicators ----- do--	8	11.4	23.3			
3494A 24	Tapping sleeves and crosses ----- do--	3	.7	1.6			
3494A 25	Fire hydrants ----- do--	7	22.5	32.6	6	(S)	43.4
	AWWA valves (all pressures):						
3494A 26	Check valves ----- do--	8	(S)	13.4	(NA)	(NA)	10104.2
3494A 27	Butterfly valves ----- do--	6	(S)	35.3			
3494A 29	Parts ----- do--	20	(X)	42.0			
3494A 31	Cocks and stops, all metals, pressures, and types ----- thousands--	14	(S)	39.2			
3494A 32	Diaphragm and pinch valves, including operators, all metals, pressures, and types ----- 1,000 s tons--	9	**97.4	36.1			
	Pop safety valves and relief valves (more than 15 lb w.s.p.):				11	(S)	37.7
3494A 33	Iron and steel ----- do--	20	**40.9	180.5	20	(S)	99.8
3494A 34	Brass and bronze ----- do--	11	(S)	11.4	13	(S)	15.9
3494A 35	Compressed gas cylinder valves ----- thousands--	10	**79.3	56.0	8	(S)	27.1
3494A 36	Steam traps (more than 15 lb w.s.p.) ----- millions--	9	(S)	59.5	10	(S)	48.8
3494A 38	Thru conduit pipeline valves ----- thousands--	4	(12)	(12)	(NA)	(NA)	(11)
	Ball valves, all pressures, types, and metals, (including manual and power operated on/off valves, but excluding automatic control valves, solenoid valves, and regulators):						
3494A 39	Iron (including ductile) ----- do--	7	(S)	34.0	8	(NA)	(13)
3494A 43	Brass and bronze ----- do--	26	*3 648.1	91.0	21	(NA)	43.4
3494A 45	Carbon steel (cast and fabricated) ----- do--	20	*3 088.5	251.8	24	(NA)	13164.0
3494A 46	Alloy steel and other metals ----- do--	19	725.3	58.6	10	(NA)	34.3
3494A 47	Actuators (power operated-on/off mounted) ----- do--	11	25.4	21.5	(NA)	(NA)	(9)
3494A 49	Parts ----- do--	20	(X)	59.5	(NA)	(NA)	(9)
	Butterfly valves, all metals, pressures, and types, including manual and power operated on/off valves, but excluding automatic control valves and regulators and all IBBW, AWWA, and UL valves:						
	Industrial types (including elastomer and fluoroelastomer lined):						
3494A 51	Iron (including ductile) ----- thousands--	23	(S)	145.0	(NA)	(NA)	(14)
3494A 52	Brass and bronze ----- do--	8	*589.7	15.3	3	(S)	4.0
3494A 53	Carbon steel (cast and fabricated) ----- do--	11	*18.9	14.3	(NA)	(NA)	(15)
3494A 54	Alloy steel and other metals ----- do--	9	**99.8	23.8	(NA)	(NA)	(16)
	High pressure types (shut-off to full ANSI class ratings):						
3494A 55	Iron ----- do--	4	62.7	24.3	(NA)	(NA)	1484.1
3494A 56	Carbon steel (cast and fabricated) ----- do--	11	**57.7	56.1	(NA)	(NA)	1596.4
3494A 57	Alloy steel and other metals ----- do--	13	(S)	36.6	(NA)	(NA)	169.7
3494A 58	Actuators (power-operated on/off mounted) ----- do--	10	43.7	12.6	(NA)	(NA)	(9)
3494A 59	Parts ----- do--	15	(X)	20.8	(NA)	(NA)	(9)
	Plug valves, all metals, pressures, and types (such as lubricated, nonlubricated, cylindrical eccentric, sleeve lined) (including manual and power operated on/off valves, but excluding automatic control valves, solenoid valves, and regulators):						
3494A 61	Iron (including ductile) ----- thousands--	15	(S)	94.1	11	(S)	33.3
3494A 63	Carbon steel ----- do--	13	**291.3	101.5	11	(NA)	67.2
3494A 65	Alloy steel and other metals ----- do--	13	**795.7	71.8	(NA)	(S)	33.7
3494A 67	Actuators (power-operated on/off mounted) ----- do--	6	*54.5	16.8	(NA)	(NA)	(9)
3494A 69	Parts ----- do--	15	(X)	38.8	(NA)	(NA)	(9)
	Power actuators (sold separately):						
3494A 71	Pneumatic actuation ----- thousands--	7	(S)	19.4	(NA)	(NA)	(11)
3494A 75	All other actuation ----- do--	7	(S)	5.9	(NA)	(NA)	(11)
3494A 98	Other metal valves (excluding control valves, regulators, and solenoid valves) ----- do--	80	122 630.9	12287.5	(NA)	(NA)	11135.0
3494A 00	Industrial valves, n.s.k. -----	(NA)	(X)	36.3	(NA)	(X)	830.9
3494B —	Hydraulic valves, except aerospace type:						
3494B 00	Hydraulic valves, all pressures, except aerospace type: As reported in the census of manufactures -----	88	(X)	435.3	(NA)	(X)	(17)
	As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) -----	(NA)	(X)	443.7	(NA)	(NA)	(NA)
	Directional control (2-, 3-, and 4-way):						
3494B 21	Manual ----- thousands--	(NA)	2 615.8	145.4	(NA)	*1 886.1	85.2
3494B 23	Solenoid ----- do--	(NA)	892.7	78.4	(NA)	*1 110.8	55.1
3494B 25	Other, including mechanical and pilot operated ----- do--	(NA)	377.1	35.6	(NA)	(S)	24.3
3494B 33	Pressure control ----- do--	(NA)	1 070.2	51.2	(NA)	*1 374.8	45.0
3494B 35	Volume flow control ----- do--	(NA)	1 449.0	34.5	(NA)	*4 888.9	64.4
3494B 37	Servovalves ----- do--	(NA)	58.6	26.3	(NA)	(S)	45.1
3494B 41	Combination ----- do--	(NA)	252.4	44.4			
3494B 48	Other, including logic ----- do--	(NA)	461.1	27.8			
3494B 0A	Hydraulic valves, n.s.k. -----	(NA)	(X)	-			

See footnotes at end of table.



**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
	<b>VALVES AND PIPE FITTINGS—Con.</b>						
3494C — 3494C 00	Pneumatic valves, except aerospace type: Pneumatic valves, all pressures, except aerospace type: As reported in the census of manufactures ----- As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) ----- Directional control:	68 (NA)	(X) (X)	339.2 343.0	(NA) (NA)	(X) (NA)	( <sup>17</sup> ) (NA)
3494C 51	Manual ----- thousands-----	(NA)	3 940.4	57.6	(NA)	**669.4	14.5
3494C 53	Solenoid ----- do-----	(NA)	3 473.3	155.4	(NA)	**1 455.7	64.2
3494C 55	Other, including mechanical ----- do-----	(NA)	726.3	14.0	(NA)	(S)	9.1
3494C 63	Pressure control, including filter-regulator and filter- regulator-lubricator combination units ----- do-----	(NA)	5 277.7	72.4	(NA)	4 342.1	45.1
3494C 65	Volume flow control ----- do-----	(NA)	1 987.9	28.5	(NA)	*1 487.7	14.5
3494C 69	Other, including logic and combination ----- do-----	(NA)	1 757.9	15.1	(NA)	(S)	23.9
3494C 0A	Pneumatic valves, n.s.k. ----- do-----	(NA)	(X)	-	(NA)	(NA)	(NA)
3494D — 3494D 00	Aerospace type hydraulic and pneumatic valves: Aerospace type hydraulic and pneumatic valves: As reported in the census of manufactures ----- As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) ----- Hydraulic:	58 (NA)	(X) (X)	262.2 255.5	(NA) (NA)	(X) (NA)	( <sup>18</sup> ) (NA)
3494D 71	2-, 3-, and 4-way directional control valves: Manually or mechanically operated ----- thousands-----	(NA)	41.2	9.4	(NA)	(NA)	(NA)
3494D 72	Solenoid operated ----- do-----	(NA)	64.9	31.4			
3494D 73	Motor operated ----- do-----	(NA)	25.0	11.0			
3494D 74	Electro-hydraulic servovalves ----- do-----	(NA)	48.0	49.9			
3494D 75	Flow pressure, and other types of hydraulic control valves, n.e.c., includes relief valves, fuses, pressure regulators, flow regulators, check valves, and similar valves ----- do-----	(NA)	483.6	35.5			
3494D 79	Pneumatic valves, all types ----- do-----	(NA)	259.8	118.3			
3494D 0A	Aerospace type hydraulic and pneumatic valves, n.s.k. ----- do-----	(NA)	(X)	-			
3494E — 3494E 00	Fittings for metal and plastics tubing used in fluid and power transfer systems, except aerospace type: Fittings for metal and plastics tubing used in fluid and power transfer systems: As reported in the census of manufactures ----- As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) ----- Flared type:	29 (NA)	(X) (X)	302.7 295.0	(NA) (NA)	(X) (NA)	( <sup>18</sup> ) (NA)
3494E 11	Brass and bronze (SAE 45 degrees and 37 degrees) ----- mil lb-----	(NA)	(S)	18.6	(NA)	(S)	35.7
3494E 13	Carbon steel (JIC 37 degrees) ----- do-----	(NA)	(S)	30.0			
3494E 15	Other, including alloy steel ----- do-----	(NA)	(S)	35.4			
3494E 21	Flareless types, including compression and bite types: Brass and bronze ----- do-----	(NA)	(S)	69.0	(NA)	(S)	42.0
3494E 23	Carbon steel ----- do-----	(NA)	(S)	20.0	(NA)	(S)	11.9
3494E 24	Stainless steel ----- do-----	(NA)	(S)	100.5	(NA)	(S)	42.2
3494E 28	Other, including alloy steel ----- do-----	(NA)	(S)	7.6	(NA)	(S)	11.1
3494E 38	Other fittings, including plastics ----- do-----	(NA)	(S)	13.9	(NA)	(S)	26.6
3494E 0A	Fittings for metal and plastics tubing used in fluid and power transfer systems, n.s.k. ----- do-----	(NA)	(X)	-	(NA)	(X)	(NA)
3494F — 3494F 00	Hydraulic and pneumatic hose or tube end fittings and assemblies, except aerospace type: Hydraulic and pneumatic hose or tube end fittings and assemblies, except aerospace type: As reported in the census of manufactures ----- As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) ----- Hose connectors:	47 (NA)	(X) (X)	319.7 329.0	(NA) (NA)	(X) (X)	( <sup>18</sup> ) (NA)
3494F 43	Hydraulic and pneumatic reusable end fittings -----	(NA)	(X)	69.9	(NA)	(X)	68.9
3494F 45	Hydraulic and pneumatic permanent hose end fittings (crimped and swaged) ----- do-----	(NA)	(X)	54.9	(NA)	(X)	89.0
3494F 47	Hydraulic quick connect and disconnect couplings ----- do-----	(NA)	(X)	43.8			
3494F 48	Pneumatic quick connect and disconnect couplings ----- do-----	(NA)	(X)	35.6			
3494F 49	Manifolds and manifold assemblies, including valve subplates ----- do-----	(NA)	(X)	4.1			
3494F 50	All other, including steel adaptor connectors, swivel, rotating, and extension fittings ----- do-----	(NA)	(X)	21.5			
3494F 51	Hydraulic and pneumatic hose assemblies: Permanent end fittings types ----- do-----	(NA)	(X)	62.8	(NA)	(S)	140.2
3494F 53	Reusable end fittings types ----- do-----	(NA)	(X)	36.5			
3494F 0A	Hydraulic and pneumatic hose or tube end fittings and assemblies, except aerospace type, n.s.k. ----- do-----	(NA)	(X)	-	(NA)	(X)	14.7

See footnotes at end of table.



**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
	<b>VALVES AND PIPE FITTINGS—Con.</b>						
3494G —	Aerospace type hydraulic and pneumatic hose or tube end fittings:						
3494G 00	Aerospace type hydraulic and pneumatic hose or tube end fittings and assemblies:						
	As reported in the census of manufactures -----	18	(X)	119.0	(NA)	(X)	<sup>18</sup> 482.3
	As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) -----	(NA)	(X)	117.3	(NA)	(NA)	(NA)
3494G 61	Hose assemblies with end fittings attached -----	(NA)	(X)	24.3			
3494G 62	Quick connect fittings, rotating, swivel, and extension fittings -----	(NA)	(X)	-			
3494G 63	Manifolds and manifold assemblies, including manifolds with filters, valves, and similar items installed -----	(NA)	(X)	5.2	(NA)	(NA)	(NA)
3494G 69	Fittings for hose and tubing, n.e.c. -----	(NA)	(X)	87.8			
3494GI0A	Aerospace type hydraulic and pneumatic hose or tube end fittings, n.s.k. -----	(NA)	(X)	-			
3494H —	Parts for fluid power valves:						
3494H 00	Parts for fluid power valves:						
	As reported in the census of manufactures -----	36	(X)	101.0	(NA)	(X)	<sup>17</sup> 535.3
	As reported in the Current Industrial Report MA-35N, Fluid Power Products (Including Aerospace) -----	(NA)	(X)	107.2	(NA)	(NA)	(NA)
3494H 96	Parts for hydraulic and pneumatic valves, except aerospace type, sold separately -----	(NA)	(X)	79.1			
3494H 98	Parts for aerospace type fluid power (hydraulic and pneumatic) valves, sold separately -----	(NA)	(X)	28.1	(NA)	(NA)	(NA)
3494HI0A	Parts for fluid power valves, n.s.k. -----	(NA)	(X)	-			
34940 00	Valves and pipe fittings, n.s.k., typically for establishments with 20 employees or more (see note) -----	(NA)	(X)	128.9	(NA)	(X)	134.0
34940 02	Valves and pipe fittings, n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	121.1	(NA)	(X)	101.7
	<b>WIRE SPRINGS</b>						
3495- —	<b>Total</b> -----	(NA)	(X)	1 064.2	(NA)	(X)	933.0
34952 —	Precision mechanical springs -----	(NA)	(X)	480.7	(NA)	(X)	392.0
34952 12	Compression type:						
	Shipments to original equipment manufacturers ----- 1,000 s						
	tons -----	112	(S)	266.7	107	(S)	206.0
34952 14	Other shipments ----- do--	45	(S)	52.2	24	(S)	45.7
34952 15	Extension type ----- do--	95	(S)	108.1	78	(S)	75.7
34952 17	Torsion type ----- do--	72	(S)	51.6	65	**31.0	60.1
34952 00	Precision mechanical springs, n.s.k. -----	(NA)	(X)	2.1	(NA)	(X)	4.5
34953 —	Other wire springs -----	(NA)	(X)	534.8	(NA)	(X)	500.1
34953 11	Upholstery and furniture springs (unassembled):						
	Seat and back springs for motor vehicles ----- 1,000 s						
	tons -----	5	(S)	<sup>(18)</sup>	8	*165.8	193.6
34953 13	Springs for mattresses and bedsprings, excluding complete bedsprings ----- do--	12	67.3	79.8	13	(S)	54.8
34953 17	Spring units for box springs, innerspring mattresses, and dual purpose sleep furniture ----- do--	17	(S)	198.9	21	(S)	122.2
34953 18	Spring units for upholstered furniture ----- do--	9	(S)	12.3	9	(S)	13.1
34953 19	Other upholstery and furniture springs (unassembled) ----- do--	12	(S)	<sup>18</sup> 115.4	10	**23.9	24.7
34953 21	Valve springs ----- do--	9	(S)	27.3	8	(S)	15.5
34953 98	Other wire springs -----	62	(S)	100.3	46	(S)	74.4
34953 00	Other wire springs, n.s.k. -----	(NA)	(X)	.8	(NA)	(X)	1.8
34950 00	Wire springs, n.s.k., typically for establishments with 20 employees or more (see note) -----	(NA)	(X)	6.0	(NA)	(X)	16.4
34950 02	Wire springs, n.s.k., typically for establishments with less than 20 employees (see note) -----	(NA)	(X)	42.7	(NA)	(X)	24.5
	<b>MISCELLANEOUS FABRICATED WIRE PRODUCTS</b>						
33151 —	<b>Total</b> -----	(NA)	(X)	4 040.8	(NA)	(X)	3 336.7
3496- —							
33151 —							
33152 —							
33156 —							
33157 —	Miscellaneous fabricated wire products, produced by wire drawers -----	(NA)	(X)	1 705.7	(NA)	(X)	1 896.7
33159 —							
33575 —							
3496- —	Miscellaneous fabricated wire products, not produced by wire drawers -----	(NA)	(X)	2 335.1	(NA)	(X)	1 440.0
34961 —	Noninsulated ferrous wire rope, cable, and strand -----	(NA)	(X)	913.4	(NA)	(X)	610.5
33151 13							
34961 13	Rope and cable made from steel wire (excluding fabricated wire rope assemblies) ----- 1,000 s						
	tons -----	63	(S)	419.1	67	(X)	394.6
33151 15	Fabricated wire rope assemblies, including lifting slings ----- do--	55	(S)	68.8	(NA)	(X)	<sup>(20)</sup>
34961 15							
33151 21							
34961 21	Composite strand, rope, and cable, including wire strands of different metals, except ACSR ----- do--	22	(S)	83.6	15	(S)	60.4

See footnotes at end of table.



**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
	<b>MISCELLANEOUS FABRICATED WIRE PRODUCTS—Con.</b>						
34961 -- 33151 --	Noninsulated ferrous wire rope, cable, and strand—Con.						
	Steel wire strand:						
33151 33 34961 35	For prestressed concrete ----- 1,000 s tons--	10	(S)	87.7	9	(S)	34.5
33151 35 34961 33	Other, including guard rail cable ----- do--	25	220.3	131.1	12	34.3	55.1
33151 51 34961 51	Wire forms, except rope assemblies ----- do--	86	(S)	119.2	57	(S)	2056.4
33151 00 34961 00	Noninsulated ferrous wire rope, cable, and strand, n.s.k. -----	(NA)	(X)	4.0	(NA)	(X)	9.5
33157 -- 34964 --	Ferrous wire cloth and other ferrous woven wire products -----	(NA)	(X)	272.5	(NA)	(X)	222.1
33157 31 34964 31	Hardware cloth ----- 1,000 s tons--	8	*55.6	24.8	(NA)	8.7	11.4
33157 61 34964 61	Industrial wire cloth, steel ----- mil sq ft--	24	33.5	79.5	30	*129.4	65.4
33157 71 34964 71	Woven wire netting (poultry, fur farm, stucco, etc.) ----- do--	10	*333.9	48.9	8	(S)	50.1
33157 99 34964 99	Other woven cloth and woven wire products, including diamond cloth, spiral cloth, drying belts, steel insect wire screening, stainless steel paper machine wire cloth, etc. ----- do--	38	(S)	117.9	(NA)	(S)	93.3
33157 00 34964 00	Ferrous wire cloth and other ferrous woven wire products, n.s.k. -----	(NA)	(X)	1.4	(NA)	(X)	1.9
33575 -- 34965 --	Nonferrous wire cloth and other nonferrous woven wire products -----	(NA)	(X)	120.7	(NA)	(X)	160.6
33575 17 34965 17	Insect wire screening ----- mil sq ft--	6	456.7	53.1	(NA)	**549.2	41.7
33575 57 34965 57	Paper machine wire cloth (fourdrinier and cylinder) ----- do--	5	38.5	19.8	7	(S)	87.9
33575 65 34965 65	Industrial wire cloth, nonferrous ----- do--	28	**13.7	47.5	(NA)	**10.9	31.0
33575 00 34965 00	Nonferrous wire cloth and other nonferrous woven wire products, n.s.k. -----	(NA)	(X)	.2	-	-	-
33156 -- 34966 --	Fencing and fence gates -----	(NA)	(X)	446.6	(NA)	(X)	411.6
33156 13 34966 13	Chain link fencing, excluding posts, gates, and fittings ----- 1,000 s tons--	34	*248.9	126.4	32	(S)	170.9
33156 21 34966 21	Wire fence, woven and welded ----- do--	28	274.6	176.7	19	(S)	78.0
33156 35 34966 35	Fence gates, posts, and fittings ----- do--	44	**298.0	120.5	(NA)	(S)	140.6
33156 71 34966 71	Ornamental lawn fence ----- do--	3	(S)	.6	(NA)	(S)	9.1
33156 00 34966 00	Fencing and fence gates, n.s.k. ----- do--	(NA)	(X)	22.5	(NA)	(X)	13.0
33152 -- 34967 --	Steel nails and spikes -----	(NA)	(X)	434.4	(NA)	(X)	447.1
	Steel wire nails, spikes, and brads:						
33152 11 34967 11	Bright ----- 1,000 s tons--	28	160.8	91.3	(NA)	168.1	107.1
33152 13 34967 13	Galvanized ----- do--	25	(S)	82.0	(NA)	74.3	52.1
33152 17 34967 15	Cement-coated ----- do--	13	39.3	20.3	(NA)	76.8	43.5
33152 19 34967 17	Other ----- do--	11	*26.6	19.8	(NA)	25.8	25.5
33152 23 34967 19	Steel wire staples ----- do--	24	*188.1	157.2	(NA)	(S)	141.2
33152 25 34967 21	Steel tacks (wire and cut) ----- do--	6	(S)	10.1	(NA)	3.2	6.0
33152 33 34967 23	Steel cut nails, spikes, and brads, including track spikes and horseshoe nails ----- do--	17	(S)	52.0	(NA)	(S)	67.5
33152 00 34967 00	Steel wire nails, spikes, and brads, n.s.k. -----	(NA)	(X)	1.6	(NA)	(X)	4.2
33159 -- 34968 --	Other fabricated wire products, except springs -----	(NA)	(X)	1 636.8	(NA)	(X)	1 265.4
33159 41 34968 41	Wire chain, tire ----- 1,000 s tons--	9	(S)	40.0	9	(S)	30.9
33159 49 34968 49	Wire chain, other ----- do--	31	(S)	181.1	25	(S)	158.3
33159 51 34968 51	Barbed and twisted steel wire ----- do--	16	84.9	60.6	14	(S)	52.0
33159 55 34968 55	Wire bale ties ----- do--	18	(S)	44.8	15	(S)	23.9

See footnotes at end of table.



**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.**

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1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
	<b>MISCELLANEOUS FABRICATED WIRE PRODUCTS—Con.</b>						
33159 — 34968 —	Other fabricated wire products, except springs—Con. Welded steel wire fabric:						
33159 61 34968 61	Concrete reinforcing mesh ----- 1,000 s tons--	41	*594.5	269.6	43	*741.9	250.7
33159 65 34968 65	Other welded steel wire fabric ----- do--	30	(S)	81.2	14	93.8	46.2
33159 71 34968 71	Wire garment hangers ----- mil lb--	13	220.6	85.3	16	(S)	68.7
33159 73 34968 73	Wire carts, including household, grocery, and industrial -----	15	(X)	103.8	(NA)	(X)	72.5
33159 75 34968 75	Steel wire cages -----	26	(X)	63.2	(NA)	(X)	43.5
33159 77 34968 77	Paper clips -----	3	(X)	( <sup>21</sup> )	4	(X)	7.8
33159 98 34968 98	Other wire products, including baskets, guards, florists' designs, kitchenware goods, etc. -----	327	(X)	<sup>21</sup> 698.0	(NA)	(X)	498.8
33159 00 34968 00	Other fabricated wire products, n.s.k. -----	(NA)	(X)	9.2	(NA)	(X)	12.1
34960 00	Miscellaneous fabricated wire products, n.s.k., typically for establishments with 5 employees or more (see note) -----	(NA)	(X)	152.6	(NA)	(X)	184.5
34960 02	Miscellaneous fabricated wire products, n.s.k., typically for establishments with less than 5 employees (see note) -----	(NA)	(X)	64.0	(NA)	(X)	34.9
	<b>METAL FOIL AND LEAF</b>						
3497- —	<b>Total</b> -----	(NA)	(X)	1 758.0	(NA)	(X)	1 070.3
34971 —	Converted unmounted aluminum foil packaging products (not laminated to other materials) -----	(NA)	(X)	654.5	(NA)		386.7
34971 32	Household, institutional, and freezer foil ----- mil lb--	13	308.6	506.9	8	354.0	386.7
34971 33	Semirigid containers ----- do--	5	*64.5	113.1	7	354.0	386.7
34971 37	Other unmounted foil flexible packaging products, including gift wrap ----- do--	13	25.1	34.5	9		
34972 —	Laminated aluminum foil rolls and sheets for flexible packaging uses -----	(NA)	(X)	775.5	(NA)	(NA)	496.9
34972 10	Film/foil without paper ----- mil lb--	24	**106.5	178.9	20	*32.4	74.2
34972 22	Foil/paper:						
34972 22	Extrusion laminated foil/paper combinations ----- do--	30	**117.4	258.9			
34972 25	Adhesive or wax laminated foil/paper combinations ----- do--	24	(S)	162.4	(NA)	177.2	397.6
34972 28	Foil/film/paper combinations ----- do--	32	**60.7	145.8			
34972 41	Gift wrap (laminated) ----- do--	10	*6.1	29.4	12	(S)	25.1
34973 —	Converted foil for nonpackaging applications and foil and leaf -----	(NA)	(X)	324.4	(NA)	(NA)	165.1
34973 52	Unmounted or coated, plain or printed ----- mil lb--	5	(S)	10.9	12	**19.5	36.1
34973 54	Laminated to other materials ----- do--	16	**83.7	91.7	13	*34.0	46.4
34973 58	Other foil, including composition (combination of two metals or more) and metal leaf (including aluminum leaf) ----- do--	27	**65.2	221.9	15	(S)	82.6
34970 00	Metal foil and leaf, n.s.k., typically for establishments with 20 employees or more -----	(NA)	(X)	(Z)	(NA)	(X)	8.6
34970 02	Metal foil and leaf, n.s.k., typically for establishments with less than 20 employees -----	(NA)	(X)	3.6	(NA)	(X)	13.0
	<b>FABRICATED PIPE AND FITTINGS</b>						
3498- —	<b>Total</b> -----	(NA)	(X)	3 035.3	(NA)	(X)	1 698.1
34980 —	Fabricated pipe and pipe fittings made from purchased pipe:						
34980 13	Iron and steel ----- 1,000 s tons--	356	(S)	2 254.0	251	(S)	1 328.8
34980 15	Aluminum and aluminum-base alloy ----- mil lb--	51	(S)	143.4	35	*26.6	31.2
34980 17	Copper and copper-base alloy ----- do--	35	(S)	113.6	38	(S)	67.4
34980 19	All other nonferrous fabricated pipe and pipe fittings ----- do--	65	(S)	358.2	48	(S)	132.7
34980 00	Fabricated pipe and fittings, n.s.k., typically for establishments with 5 employees or more (see note) -----	(NA)	(X)	80.9	(NA)	(X)	102.3
34980 02	Fabricated pipe and fittings, n.s.k., typically for establishments with less than 5 employees (see note) -----	(NA)	(X)	85.2	(NA)	(X)	35.7

See footnotes at end of table.



**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
	<b>FABRICATED METAL PRODUCTS, N.E.C.</b>						
3499—	Total .....	(NA)	(X)	4 210.9	(NA)	(X)	3 390.3
34991—	Safes and vaults .....	(NA)	(X)	282.6	(NA)	(X)	181.6
34991 17	Safes and vaults (fire resistive and burglary resistive):						
	As reported in the census of manufactures .....	24	(X)	120.3	(NA)	**384.0	52.9
	As reported in the Current Industrial Report MA-25H,						
	Office Furniture .....	(NA)	(X)	119.8	(NA)	( <sup>22</sup> )	( <sup>22</sup> )
34991 15	Fire resistive (whether or not burglary resistive) .....	(NA)	1 457.2	62.5	(NA)	( <sup>22</sup> )	( <sup>22</sup> )
34991 21	Other burglary resistive .....	(NA)	113.8	57.3	(NA)	( <sup>22</sup> )	( <sup>22</sup> )
34991 41	Safe deposit boxes .....	8	987.4	48.2	10	1 329.1	38.6
34991 98	All other bank and security vaults and equipment						
	(including bank security lockers, night depositones,						
	security equipment for drive-in windows and similar						
	equipment, and signaling and alarm equipment when						
	sold together with bank equipment) and other interior						
	equipment for safes and chests .....	15	(X)	114.0	11	(X)	89.0
34991 00	Safes and vaults, n.s.k. ....	(NA)	(X)	.1	(NA)	(X)	1.1
34992—	Collapsible tubes .....	(NA)	(X)	84.7	(NA)	(X)	106.5
34992 11	Aluminum .....	15	**5.2	69.9	14	**10.3	88.3
34992 12	Lead .....	2	.8	13.3	3	5.5	17.4
34992 19	Other, including tin, tin-coated, and tin-lead alloy .....	8			4		
34992 00	Collapsible tubes, n.s.k. ....	(NA)	(X)	1.6	(NA)	(X)	.8
34993—	Flat metal strapping:						
34993 00	Flat metal strapping .....	13	294.2	271.6	29	412.5	272.6
34995—	Metal ladders .....	(NA)	(X)	152.0	(NA)	(X)	98.3
34995 11	Step and platform types .....	28	**946.9	39.0	16	**1 669.5	49.0
34995 13	Single and extension ladders .....	16	869.7	42.6	14	1 037.6	34.1
34995 15	Trestle and trestle extension ladders .....						
34995 19	Other, including ladder type step stools, combination step						
	and extension ladders, scaffolding, levellers, aluminum						
	planks, and ladder jacks .....	36	(S)	70.4	13	(S)	15.2
34995 00	Metal ladders, n.s.k. ....	(NA)	(X)	-	(NA)	( <sup>23</sup> )	( <sup>23</sup> )
34996—	Powder metallurgy parts (excluding bearings, gears, and						
	machine cutting tools and all cemented carbide parts) .....	(NA)	(X)	441.3	(NA)	( <sup>24</sup> )	( <sup>24</sup> )
34996 11	Aluminum and aluminum base alloy .....	15	**53.7	64.9			
34996 33	Copper and copper-base alloy .....	25	(S)	38.1			
34996 55	Iron and steel .....	70	**482.2	171.3	(NA)	( <sup>24</sup> )	( <sup>24</sup> )
34996 66	Nickel-cobalt-base super alloy materials .....	4	(S)	8.4			
34996 77	Tungsten metal and tungsten-base alloy .....	12	(S)	73.0			
34996 88	Other materials .....	31	(S)	85.7			
34996 00	Powder metallurgy parts (excluding bearings, gears, and						
	machine cutting tools and all cemented carbide parts),						
	n.s.k. ....	(NA)	(X)	-	(NA)	( <sup>23</sup> )	( <sup>23</sup> )
34998—	All other fabricated metal products, n.e.c. ....	(NA)	(X)	2 277.1	(NA)	(X)	2 201.7
34998 11	Permanent magnets, except ceramic permanent						
	magnets .....	29	(X)	122.7	16	(X)	103.8
34998 19	Fabricated assemblies of railroad frogs, switches, and						
	crossings .....	10	**118.9	165.0	9	*242.5	195.6
34998 21	Steel boxes for packaging and shipping .....	20	(X)	58.8	16	(X)	40.3
34998 29	Stamped metal wheels for golf carts, lawn mowers, etc.,						
	(disc type) .....	8	(X)	26.7	5	(X)	16.3
34998 31	Metal aerosol valves .....	4	(X)	13.6	10	(X)	57.0
34998 39	Metal spools and reels .....	19	(X)	61.7	9	(X)	24.5
34998 98	Other fabricated metal products, n.e.c., including						
	ammunition boxes and chests, metal ironing boards,						
	and metal memorial tablets and grave markers .....	998	(X)	1 828.7	802	(X)	<sup>24</sup> 1 549.6
34998 00	All other fabricated metal products, n.e.c., n.s.k. ....	(NA)	(X)	-	(NA)	(X)	<sup>23</sup> 214.6
34990 00	Fabricated metal products, n.e.c., n.s.k., typically for						
	establishments with 5 employees or more (see note) .....	(NA)	(X)	594.5	(NA)	(X)	385.4
34990 02	Fabricated metal products, n.e.c., n.s.k., typically for						
	establishments with less than 5 employees (see note) .....	(NA)	(X)	107.0	(NA)	(X)	144.2

See footnotes at end of table.



**Table 6a-1. Product and Product Classes—Quantity and Value of Shipments by All Producers: 1982 and 1977—Con.**

Note: In 1982 Census of Manufactures, data for establishments of small single-unit companies with up to 20 employees were estimated from administrative records data rather than data actually collected from respondents. Employment cutoff used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1982 and 1977 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

- <sup>1</sup>Data reported by all producers, not just those with shipments of \$100,000 or more.  
<sup>2</sup>For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: \* 10 to 19 percent estimated; \*\* 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).  
<sup>3</sup>For 1977, product code 34931 55 was included in 34931 98. Value of this product code, less shipments for export, for 1977 was \$42.4 million.  
<sup>4</sup>For 1982, product code 34931 65 is combined with product code 34931 00 to avoid disclosing data for individual companies.  
<sup>5</sup>Data for Current Industrial Report MA-33B include nuclear valves; the census of manufactures classifies all nuclear valves in product class 34949.  
<sup>6</sup>For 1982, product code 34948 59 is included with product code 34948 61.  
<sup>7</sup>For 1982, product codes 34949 21 and 34949 23 are included with product code 34949 25 to avoid disclosing data for individual companies.  
<sup>8</sup>For 1977, product code 34949 00 was combined with product code 3494A 00.  
<sup>9</sup>For 1977, values for actuators and parts were included with specific product codes.  
<sup>10</sup>For 1977, data for product codes 3494A 21, 3494A 22, 3494A 23, 3494A 26, 3494A 27, and 3494A 29 were combined.  
<sup>11</sup>For 1977, product codes 3494A 24, 3494A 38, 3494A 71, and 3494A 75 were combined with product code 3494A 98.  
<sup>12</sup>For 1982, product code 3494A 38 is included with product code 3494A 98 to avoid disclosing data for individual companies.  
<sup>13</sup>For 1977, product code 3494A 39 was included with product code 3494A 45.  
<sup>14</sup>For 1977, product code 3494A 51 was included with product code 3494A 55.  
<sup>15</sup>For 1977, product code 3494A 53 was included with product code 3494A 56.  
<sup>16</sup>For 1977, product code 3494A 54 was included with product code 3494A 57.  
<sup>17</sup>For 1977, values for aerospace type hydraulic and pneumatic valves and parts for fluid power valves were included in total of both hydraulic valves and pneumatic valves.  
<sup>18</sup>For 1977, values for aerospace type hydraulic and pneumatic hose or tube end fittings were included in total for hydraulic and pneumatic hose or tube end fittings, except aerospace type.  
<sup>19</sup>For 1982, product code 34953 11 is included with product code 34953 19.  
<sup>20</sup>For 1977, product codes 33151 15 and 34961 15 were included with product code 33151 51 and 34961 51.  
<sup>21</sup>For 1982, product codes 33159 77 and 34968 77 are included with product codes 33159 98 and 34968 98 to avoid disclosing data for individual companies.  
<sup>22</sup>Current Industrial Report was not initiated until 1981.  
<sup>23</sup>For 1977, product codes 34995 00 and 34996 00 were included with product code 34998 00.  
<sup>24</sup>For 1977, product codes 34996 11, 34996 33, 34996 55, 34996 66, 34996 77, and 34996 88 were included with product code 34998 98.

**Table 6a-2. Selected Products Primary to More Than One Industry—Quantity and Value of Shipments by Industry: 1982 and 1977**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
33151 — 33152 — 33156 — 33157 — 33159 — 33575 — 3496 —	Miscellaneous fabricated wire products-----	(NA)	(X)	4 040.8	(NA)	(X)	3 336.7
33151 — 33152 — 33156 — 33157 — 33159 — 33575 —	Miscellaneous fabricated wire products, produced by wiredrawers-----	(NA)	(X)	1 705.7	(NA)	(X)	1 896.7
3496 —	Miscellaneous fabricated wire products, not produced by wire drawers-----	(NA)	(X)	2 335.1	(NA)	(X)	1 440.0
33151 — 34961 — 33151 —	Noninsulated ferrous wire rope, cable, and strand----- Made in industries 3312 (blast furnaces and steelmills) and 3315 (steel wire and related products)-----	(NA) (NA)	(X) (X)	913.4 522.0	(NA) (NA)	(X) (X)	610.5 439.1
34961 —	Made in industry 3496 (miscellaneous fabricated wire products) and other industries-----	(NA)	(X)	391.4	(NA)	(X)	171.4
33151 13 34961 13	Steel wire rope and cable----- 1 000 s tons-----	63	(S)	419.1	67	(S)	<sup>3</sup> 394.6
33151 13 34961 13	Made in industries 3312 and 3315----- do--	16	166.6	286.8	29	(S)	<sup>3</sup> 307.3
33151 13 34961 13	Made in industry 3496 and other industries----- do--	47	(S)	132.3	38	(S)	<sup>3</sup> 87.3
33151 15 34961 15	Fabricated wire rope assemblies, including lifting slings----- do--	55	(S)	68.8	(NA)	(?)	(?)
33151 15 34961 15	Made in industries 3312 and 3315----- do--	16	(D)	(D)	(NA)	(?)	(?)
33151 15 34961 15	Made in industry 3496 and other industries----- do--	39	(S)	(D)	(NA)	(?)	(?)
33151 21 34961 21	Composite strand, rope, and cable, including wire strands of different metals, except ACSR----- do--	22	(S)	83.6	(NA)	(S)	60.4
33151 21 34961 21	Made in industries 3312 and 3315----- do--	4	32.6	40.7	7	<sup>*</sup> 33.3	36.9
33151 21 34961 21	Made in industry 3496 and other industries----- do--	18	(S)	42.9	8	(S)	23.5
33151 33 34961 35	Steel wire strand for prestressed concrete----- do--	10	(S)	87.7	(NA)	(S)	34.5
33151 33 34961 35	Made in industries 3312 and 3315----- do--	9	}	(D)	5	49.9	34.5
33151 33 34961 35	Made in industry 3496 and other industries----- do--	1			4	(S)	
33151 35 34961 33	Steel wire strand, except wire strand for prestressed concrete, including guard rail cable----- do--	25		131.1	(NA)	34.3	55.1
33151 35 34961 33	Made in industries 3312 and 3315----- do--	15		88.4	11	}	55.1
33151 35 34961 33	Made in industry 3496 and other industries----- do--	10		42.7	1		

See footnotes at end of table.



**Table 6a-2. Selected Products Primary to More Than One Industry—Quantity and Value of Shipments by Industry: 1982 and 1977—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
33161 — 33152 — 33156 — 33157 — 33159 — 33575 — 3496 — 33151 15 34961 15	Miscellaneous fabricated wire products—Con.						
33151 51 34961 51	Fabricated wire rope assemblies, including lifting slings— Con.						
33151 51 34961 51	Wire forms ..... 1,000 s tons..	86	(S)	119.2	(NA)	(S)	356.4
33151 51 34961 51	Made in industries 3312 and 3315 .....	6	(S)	7.5	10	*22.3	315.8
33151 00 34961 00	Made in industry 3496 and other industries .....	80	(S)	111.6	47	(S)	40.6
33157 — 34964 —	Noninsulated ferrous wire rope, cable, and strand, n.s.k. ....	(NA)	(X)	4.0	(NA)	(X)	9.5
33157 — 34964 —	Ferrous wire cloth and other ferrous woven wire products .....	(NA)	(X)	272.5	(NA)	(X)	222.1
33157 —	Made in industries 3312 (blast furnaces and steelmills) and 3315 (steel wire and related products) .....	(NA)	(X)	68.0	(NA)	(X)	84.4
34964 —	Made in industry 3496 (miscellaneous fabricated wire products) and other industries .....	(NA)	(X)	204.4	(NA)	(X)	137.7
33157 31 34964 31	Hardware cloth ..... 1,000 s tons..	8	*55.6	24.8	(NA)	8.7	11.4
33157 31 34964 31	Made in industries 3312 and 3315 .....	3	(D)	(D)	(NA)	(D)	(D)
33157 61 34964 61	Made in industry 3496 and other industries .....	5	(D)	(D)	(NA)	(D)	(D)
33157 61 34964 61	Industrial wire cloth, steel ..... mil sq ft..	24	33.5	79.5	(NA)	*129.4	65.4
33157 61 34964 61	Made in industries 3312 and 3315 .....	3	(D)	(D)	5	*104.3	16.9
33157 61 34964 61	Made in industry 3496 and other industries .....	21	(D)	(D)	25	**25.3	48.5
33157 71 34964 71	Woven wire netting (poultry, fur farm, stucco, etc.) .....	10	*333.9	48.9	(NA)	(S)	50.1
33157 71 34964 71	Made in industries 3312 and 3315 .....	8	(D)	(D)	8	(S)	50.1
33157 71 34964 71	Made in industry 3496 and other industries .....	2	(D)	(D)	-		
33157 99 34964 99	Other woven cloth and woven wire products, including diamond cloth, spiral cloth, drying belts, etc. ....	38	(S)	117.9	(NA)	(S)	93.3
33157 99 34964 99	Made in industries 3312 and 3315 .....	2	(D)	(D)	(NA)	(D)	(D)
33157 00 34964 00	Made in industry 3496 and other industries .....	36	(D)	(D)	(NA)	(D)	(D)
33157 00 34964 00	Ferrous wire cloth and other woven ferrous wire products, n.s.k. ....	(NA)	(X)	1.4	(NA)	(X)	1.9
33575 — 34965 —	Nonferrous wire cloth and other woven nonferrous wire products .....	(NA)	(X)	120.7	(NA)	(X)	160.6
33575 —	Made in industry 3357 (nonferrous wire drawing and insulating) .....	(NA)	(X)	39.1	(NA)	(X)	94.5
34965 —	Made in industry 3496 (miscellaneous fabricated wire products) and other industries .....	(NA)	(X)	81.6	(NA)	(X)	66.1
33575 17 34965 17	Insect wire screening ..... mil sq ft..	6	546.7	53.1	7	549.2	41.7
33575 17 34965 17	Made in industry 3357 .....	2	(D)	(D)	4	287.5	19.8
33575 17 34965 17	Made in industry 3496 and other industries .....	4	(D)	(D)	4	261.7	21.8
33575 57 34965 57	Paper machine wire cloth (fourdrinier and cylinder) .....	5	38.5	19.8	7	(S)	87.9
33575 57 34965 57	Made in industry 3357 .....	1	(D)	(D)	2	(D)	(D)
33575 57 34965 57	Made in industry 3496 and other industries .....	4	(D)	(D)	5	(D)	(D)
33575 65 34965 65	Industrial wire cloth, nonferrous .....	28	*13.7	47.5	19	**10.9	31.0
33573 65 34965 65	Made in industry 3357 .....	3	(D)	(D)	(NA)	(D)	(D)
33573 65 34965 65	Made in industry 3496 and other industries .....	25	(D)	(D)	(NA)	(D)	(D)
33575 00 34965 00	Nonferrous wire cloth and other woven nonferrous wire products, n.s.k. ....	(NA)	(X)	.2	-	-	-
33156 — 34966 — 33156 —	Fencing and fence gates .....	(NA)	(X)	446.6	(NA)	(X)	411.6
33156 —	Made in industries 3312 (blast furnaces and steelmills) and 3315 (steel wire and related products) .....	(NA)	(X)	301.5	(NA)	(X)	280.3
34966 —	Made in industry 3496 (miscellaneous fabricated wire products) and other industries .....	(NA)	(X)	145.1	(NA)	(X)	131.3
33156 13 34966 13	Chain link fencing, excluding posts, gates, and fittings ..... 1 000 s tons..	34	*248.9	126.4	(NA)	(S)	170.9
33156 13 34966 13	Made in industries 3312 and 3315 .....	12	**102.8	63.9	12	(S)	125.8
33156 21 34966 21	Made in industry 3496 and other industries .....	22	146.1	62.5	20	(S)	45.1
33156 21 34966 21	Wire fence, woven and welded .....	28	274.6	176.7	(NA)	(S)	78.0
33156 21 34966 21	Made in industries 3312 and 3315 .....	13	235.9	148.8	12	135.1	72.1
33156 21 34966 21	Made in industry 3496 and other industries .....	15	**38.7	27.9	7	(S)	5.9
33156 35 34966 35	Fence gates, posts, and fittings .....	44	**298.0	120.5	(NA)	(S)	140.6
33156 35 34966 35	Made in industries 3312 and 3315 .....	12	*70.8	66.4	(NA)	(D)	(D)
33156 35 34966 35	Made in industry 3496 and other industries .....	32	**227.1	54.1	(NA)	(D)	(D)

See footnotes at end of table.



**Table 6a-2. Selected Products Primary to More Than One Industry—Quantity and Value of Shipments by Industry: 1982 and 1977—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
33151 — 33152 — 33156 — 33157 — 33159 — 33575 — 3496 —	Miscellaneous fabricated wire products—Con.						
33156 — 34966 — 33156 71 34966 71	Fencing and fence gates—Con.						
	Ornamental lawn fence..... 1,000 s						
	tons.....	3	(S)	.6	(NA)	(S)	9.1
33156 71	Made in industries 3312 and 3315..... do..	—	—	—	(NA)	(D)	(D)
34966 71	Made in industry 3496 and other industries..... do..	3	(S)	.6	(NA)	(D)	(D)
33156 00 34966 00	Fencing and fence gates, n.s.k. .... do..	(NA)	(X)	22.5	(NA)	(X)	13.0
33152 — 34967 — 33152 —	Steel nails and spikes.....	(NA)	(X)	434.4	(NA)	(X)	447.1
	Made in industries 3312 (blast furnaces and steel						
	mills) and 3315 (steel wire and related products).....	(NA)	(X)	227.8	(NA)	(X)	359.0
34967 —	Made in industry 3496 (miscellaneous fabricated wire						
	products) and other industries.....	(NA)	(X)	206.6	(NA)	(X)	88.1
	Steel wire nails, spikes, and brads:						
33152 11 34967 11	Bright..... 1 000 s						
	tons.....	28	160.8	91.3	(NA)	168.1	107.1
33152 11	Made in industries 3312 and 3315..... do..	16	113.1	72.4	(NA)	(D)	(D)
34967 11	Made in industry 3496 and other industries..... do..	12	47.7	18.9	(NA)	(D)	(D)
33152 13 34967 13	Galvanized..... do..	25	(S)	82.0	(NA)	74.3	52.1
33152 13	Made in industries 3312 and 3315..... do..	16	*57.1	53.3	(NA)	(D)	(D)
34967 13	Made in industry 3496 and other industries..... do..	9	(S)	28.7	(NA)	(D)	(D)
33172 15 34967 15	Cement-coated..... do..	13	39.3	20.3	(NA)	76.8	43.5
33152 17	Made in industries 3312 and 3315..... do..	11	(D)	(D)	(NA)	(D)	(D)
34967 15	Made in industry 3496 and other industries..... do..	2	(D)	(D)	(NA)	(D)	(D)
33152 19 34967 17	Other nails, spikes, etc..... do..	11	*26.6	19.8	(NA)	25.8	25.5
33152 19	Made in industries 3312 and 3315..... do..	5	(D)	(D)	(NA)	(D)	(D)
34967 17	Made in industry 3496 and other industries..... do..	6	(D)	(D)	(NA)	(D)	(D)
33152 23 34967 19	Steel wire staples..... do..	24	*188.1	157.2	(NA)	(S)	141.2
33152 23	Made in industries 3312 and 3315..... do..	7	36.5	41.4	(NA)	(D)	(D)
34967 19	Made in industry 3496 and other industries..... do..	17	*151.6	115.8	(NA)	(D)	(D)
33142 25 34967 21	Steel tacks (wire and cut)..... do..	6	(S)	10.1	(NA)	3.2	6.0
33152 25	Made in industries 3312 and 3315..... do..	—	—	—	(NA)	(D)	(D)
34967 21	Made in industry 3496 and other industries..... do..	6	(S)	10.1	(NA)	(D)	(D)
33152 33 34967 23	Steel cut nails, spikes, and brads, including track						
	spikes and horseshoe nails..... do..	17	(S)	52.0	(NA)	(S)	67.5
33152 33	Made in industries 3312 and 3315..... do..	8	(S)	24.8	(NA)	(D)	(D)
34967 23	Made in industry 3496 and other industries..... do..	9	(S)	27.2	(NA)	(D)	(D)
33152 00 34967 00	Steel wire nails, spikes, and brads, n.s.k. .... do..	(NA)	(X)	1.6	(NA)	(X)	4.2
33159 — 34968 — 33159 —	Other fabricated wire products.....	(NA)	(X)	1 636.8	(NA)	(X)	1 265.4
	Made in industries 3312 (blast furnaces and steel						
	mills) and 3315 (steel wire and related products).....	(NA)	(X)	547.2	(NA)	(X)	639.5
34968 —	Made in industry 3496 (miscellaneous fabricated wire						
	products) and other industries.....	(NA)	(X)	1 089.6	(NA)	(X)	626.0
	Wire chain:						
33159 41 34968 41	Tire..... 1 000 s						
	tons.....	9	(S)	40.0	(NA)	(S)	30.9
33159 41	Made in industries 3312 and 3315..... do..	5	14.2	34.3	5	30.8	27.9
34968 41	Made in industry 3496 and other industries..... do..	4	(S)	5.7	4	(S)	3.1
33159 49 33159 49	Other..... do..	31	(S)	181.1	(NA)	(S)	158.3
33159 49	Made in industry 3312 and 3315..... do..	6	(S)	97.0	7	107.2	104.5
34968 49	Made in industry 3496 and other industries..... do..	25	(S)	84.1	18	(S)	53.8
33159 51 34968 51	Barbed and twisted steel wire..... do..	16	84.9	60.6	(NA)	(S)	52.0
33159 51	Made in industries 3312 and 3315..... do..	11	78.6	59.0	11	(S)	52.0
34968 51	Made in industry 3496 and other industries..... do..	5	6.3	1.6	3		
33159 55 34968 55	Wire bale ties..... do..	18	(S)	44.8	(NA)	(S)	23.9
33159 55	Made in industries 3312 and 3315..... do..	7	26.7	18.5	10	41.9	19.4
34968 55	Made in industry 3496 and other industries..... do..	11	(S)	26.3	5	(S)	4.5
	Welded steel wire fabric:						
33159 61 34968 61	Concrete reinforcing mesh..... do..	41	*594.5	269.6	(NA)	*741.9	250.7
33159 61	Made in industries 3312 and 3315..... do..	17	*481.1	217.7	27	*718.8	241.8
34968 61	Made in industry 3496 and other industries..... do..	24	*113.4	51.9	16	*23.1	8.9
33159 65 34968 65	Other welded steel wire fabric..... do..	30	(S)	81.2	(NA)	93.8	46.2
33159 65	Made in industries 3312 and 3315..... do..	8	60.7	39.0	8	91.3	39.2
34968 65	Made in industry 3496 and other industries..... do..	22	(S)	42.2	6	2.5	7.0
33159 71 34968 71	Wire garment hangers..... mil lb..	13	220.6	85.3	(NA)	(S)	68.7
33159 71	Made in industries 3312 and 3315..... do..	4	153.7	57.7	6	(S)	48.2
34968 71	Made in industry 3496 and other industries..... do..	9	66.9	27.6	10	*72.7	20.5

See footnotes at end of table.



**Table 6a-2. Selected Products Primary to More Than One Industry—Quantity and Value of Shipments by Industry: 1982 and 1977—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For further explanation, see Value of Shipments in appendixes. For meaning of abbreviations and symbols, see introductory text]

1982 product code	Product	1982			1977		
		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>		Number of companies with shipments of \$100,000 or more	Product shipments <sup>1</sup>	
			Quantity <sup>2</sup>	Value (million dollars)		Quantity <sup>2</sup>	Value (million dollars)
33151 — 33152 — 33156 — 33157 — 33159 — 33575 — 3496 —	Miscellaneous fabricated wire products—Con.						
33159 — 34968 — 33159 73 34968 73	Other fabricated wire products—Con.						
	Wire carts, including household, grocery, and industrial .....	15	(X)	103.8	(NA)	(X)	72.5
33159 73	Made in industries 3312 and 3315 .....	—	—	—	(NA)	(D)	(D)
34968 73	Made in industry 3496 and other industries .....	15	(X)	103.8	(NA)	(D)	(D)
33159 75 34968 75	Steel wire cages .....	26	(X)	63.2	(NA)	(X)	43.5
33159 75	Made in industries 3312 and 3315 .....	—	—	—	(NA)	(D)	(D)
34968 75	Made in industry 3496 and other industries .....	26	(X)	63.2	(NA)	(D)	(D)
33159 77 34968 77	Paper clips .....	3	(X)	( <sup>4</sup> )	4	(X)	7.8
33159 98 34968 98	Other wire products, including baskets, guards, florists' designs, kitchenware, etc. ....	327	(X)	4698.0	(NA)	(X)	498.8
33159 98	Made in industries 3312 and 3315 .....	12	(X)	420.6	(NA)	(D)	(D)
34968 98	Made in industry 3496 and other industries .....	315	(X)	4677.4	(NA)	(D)	(D)
33159 00 34968 00	Other fabricated wire products, n.s.k. ....	(NA)	(X)	9.2	(NA)	(X)	12.1
34960 00	Miscellaneous fabricated wire products, n.s.k., typically for establishments with 5 employees or more (see note) .....	(NA)	(X)	154.7	(NA)	(X)	184.5
34960 02	Miscellaneous fabricated wire products, n.s.k., typically for establishments with less than 5 employees (see note) .....	(NA)	(X)	61.8	(NA)	(X)	34.9

Note In 1982 Census of Manufactures, data for establishments of small single-unit companies with up to 20 employees were estimated from administrative records data rather than data actually collected from respondents. Employment cutoff used for administrative records for each industry and shipments figures are included in code ending with "002". In both 1982 and 1977 Censuses of Manufactures, products not completely identified on standard forms were coded in appropriate product class (five-digit) followed by "00" or to appropriate product group code (four-digit) followed by "000".

<sup>1</sup>Data reported by all producers, not just those with shipments of \$100,000 or more.

<sup>2</sup>For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: \* 10 to 19 percent estimated; \*\* 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

<sup>3</sup>For 1977, product code 33151 15 was included with product codes 33151 13 and 33151 51; product code 34961 15 was included with product codes 34961 13 and 34961 51.

<sup>4</sup>For 1982, product codes 33159 77 and 34968 77 are combined with product codes 33149 98 and 34968 98 to avoid disclosing data for individual companies.



**Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977**

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Product class and geographic area	1982 value of product shipments	1977 value of product shipments	Product class and geographic area	1982 value of product shipments	1977 value of product shipments
<b>34931, HOT FORMED SPRINGS</b>			<b>34949, NUCLEAR VALVES</b>		
United States .....	395.8	454.2	United States .....	152.0	(NA)
California .....	19.5	21.1	California .....	30.0	(NA)
Illinois .....	46.2	(FF)	Ohio .....	5.9	(NA)
Indiana .....	35.3	84.7	Pennsylvania .....	38.3	(NA)
Pennsylvania .....	73.2	111.6	Texas .....	13.9	(NA)
Texas .....	8.6	5.4			
			<b>3494A, INDUSTRIAL VALVES</b>		
<b>34932, COLD FORMED SPRINGS</b>			United States .....	3 273.5	(NA)
United States .....	94.8	94.3	Alabama .....	99.7	(NA)
California .....	6.6	4.7	Arkansas .....	109.7	(NA)
Connecticut .....	17.0	(EE)	California .....	190.2	(NA)
Illinois .....	14.2	16.4	Connecticut .....	82.1	(NA)
Michigan .....	17.3	22.9	Florida .....	23.0	(NA)
Ohio .....	6.6	8.0	Georgia .....	18.0	(NA)
Pennsylvania .....	20.9	17.3	Illinois .....	178.7	(NA)
			Indiana .....	38.0	(NA)
<b>34944, PLUMBING AND HEATING VALVES AND SPECIALTIES</b>			Iowa .....	50.0	(NA)
United States .....	220.2	206.6	Kansas .....	6.9	(NA)
Indiana .....	19.2	(OC)	Louisiana .....	80.9	(NA)
Iowa .....	9.5	(OC)	Massachusetts .....	221.5	(NA)
New York .....	4.7	5.4	Michigan .....	48.6	(NA)
Ohio .....	23.4	(CC)	Mississippi .....	27.6	(NA)
Pennsylvania .....	16.7	9.6	Missouri .....	10.9	(NA)
Texas .....	12.0	(FF)	New Jersey .....	72.4	(NA)
Wisconsin .....	15.0	(BB)	New York .....	89.1	(NA)
			North Carolina .....	66.5	(NA)
<b>34945, METAL FITTINGS, FLANGES, AND UNIONS FOR PIPING SYSTEMS</b>			Ohio .....	314.5	(NA)
United States .....	1 491.2	1 018.8	Oklahoma .....	172.3	(NA)
Alabama .....	77.5	(GG)	Oregon .....	7.3	(NA)
California .....	97.2	42.2	Pennsylvania .....	187.6	(NA)
Illinois .....	77.0	74.3	Rhode Island .....	9.2	(NA)
Indiana .....	37.5	80.1	South Carolina .....	45.8	(NA)
Kentucky .....	58.3	50.7	Tennessee .....	131.4	(NA)
Louisiana .....	47.8	18.1	Texas .....	733.5	(NA)
Maryland .....	14.5	(NA)			
Massachusetts .....	3.8	(BB)	<b>3494B, HYDRAULIC VALVES, EXCEPT AEROSPACE TYPE</b>		
Michigan .....	55.8	26.7	United States .....	435.3	(NA)
Missouri .....	13.4	(EE)	California .....	53.6	(NA)
New Jersey .....	38.0	22.8	Illinois .....	23.1	(NA)
New York .....	35.4	46.4	Michigan .....	22.4	(NA)
Ohio .....	254.0	103.7	Minnesota .....	37.6	(NA)
Oklahoma .....	49.2	14.3	New Jersey .....	25.3	(NA)
Pennsylvania .....	220.6	187.6	Ohio .....	58.7	(NA)
Tennessee .....	31.7	(AA)	Pennsylvania .....	7.1	(NA)
Texas .....	216.0	122.4	Texas .....	7.8	(NA)
Wisconsin .....	34.9	38.0	Wisconsin .....	54.0	(NA)
			<b>3494C, PNEUMATIC VALVES, EXCEPT AEROSPACE TYPE</b>		
<b>34947, AUTOMATIC REGULATING AND CONTROL VALVES</b>			United States .....	339.2	(NA)
United States .....	1 233.0	696.1	Illinois .....	20.3	(NA)
California .....	191.0	81.8	Michigan .....	106.5	(NA)
Connecticut .....	18.5	(BB)	New Jersey .....	50.5	(NA)
Illinois .....	75.4	30.9	North Carolina .....	27.4	(NA)
Indiana .....	50.3	(FF)	Ohio .....	11.2	(NA)
Massachusetts .....	68.8	(GG)	Pennsylvania .....	19.9	(NA)
Michigan .....	19.1	10.7	Texas .....	14.8	(NA)
Missouri .....	56.7	(FF)			
New Jersey .....	41.9	21.3	<b>3494D, AEROSPACE TYPE HYDRAULIC AND PNEUMATIC VALVES</b>		
New York .....	57.9	17.1	United States .....	262.2	(NA)
Ohio .....	64.9	24.9	Arizona .....	9.2	(NA)
Oklahoma .....	34.4	11.1	California .....	123.7	(NA)
Pennsylvania .....	72.0	80.0	Michigan .....	14.3	(NA)
Rhode Island .....	28.4	(EE)	New York .....	75.4	(NA)
Texas .....	128.1	(FF)			
Wisconsin .....	36.2	(GG)	<b>3494E, FITTINGS FOR METAL AND PLASTICS TUBING USED IN FLUID POWER SYSTEMS, EXCEPT AEROSPACE TYPE</b>		
			United States .....	302.7	(NA)
<b>34948, SOLENOID VALVES</b>			Ohio .....	111.5	(NA)
United States .....	206.1	114.8			
California .....	8.1	(CC)			
Missouri .....	24.0	(EE)			
New Jersey .....	56.5	(FF)			

See footnotes at end of table.



Table 6b. **Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977—Con.**

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Product class and geographic area	1982 value of product shipments	1977 value of product shipments	Product class and geographic area	1982 value of product shipments	1977 value of product shipments
<b>3494F, HYDRAULIC AND PNEUMATIC HOSE OR TUBE END FITTINGS AND ASSEMBLIES, EXCEPT AEROSPACE TYPE</b>			<b>34961, NONINSULATED FERROUS WIRE ROPE, CABLE, ETC., NOT PRODUCED BY WIREDRAWERS (ALSO SEE CODE 33151)</b>		
United States -----	319.7	(NA)	United States -----	391.4	171.4
California -----	16.1	(NA)	California -----	22.6	23.9
Indiana -----	15.1	(NA)	Connecticut -----	24.2	13.6
Iowa -----	7.5	(NA)	Florida -----	6.9	(AA)
Michigan -----	27.7	(NA)	Illinois -----	23.1	28.5
Minnesota -----	7.4	(NA)	Massachusetts -----	13.5	(AA)
Ohio -----	115.8	(NA)	Michigan -----	9.0	7.5
Pennsylvania -----	21.8	(NA)	Minnesota -----	7.0	(AA)
Texas -----	12.3	(NA)	New Jersey -----	26.7	13.7
			New York -----	16.4	2.6
			North Carolina -----	8.9	(BB)
<b>3494G, AEROSPACE TYPE HYDRAULIC AND PNEUMATIC HOSE OR TUBE END FITTINGS</b>			Ohio -----	30.9	13.2
United States -----	119.0	(NA)	Pennsylvania -----	42.9	19.1
California -----	25.4	(NA)	Texas -----	34.5	8.2
			Wisconsin -----	25.3	7.8
<b>3494H, PARTS FOR FLUID POWER VALVES</b>			<b>34964, FERROUS WIRE CLOTH AND OTHER WOVEN WIRE PRODUCTS, NOT PRODUCED BY WIREDRAWERS (ALSO SEE CODE 33157)</b>		
United States -----	101.0	(NA)	United States -----	204.4	137.7
California -----	18.1	(NA)	California -----	8.2	15.2
Michigan -----	9.7	(NA)	Florida -----	5.2	(AA)
Ohio -----	10.3	(NA)	Illinois -----	3.4	11.5
			Indiana -----	3.7	(AA)
			New Jersey -----	33.6	(EE)
<b>34952, PRECISION MECHANICAL SPRINGS</b>			Ohio -----	13.2	7.8
United States -----	480.7	392.0	Pennsylvania -----	15.8	11.9
California -----	38.2	26.9	Texas -----	3.1	(BB)
Connecticut -----	45.7	38.3	Wisconsin -----	6.7	(BB)
Illinois -----	95.4	85.3			
Indiana -----	32.7	33.8	<b>34965, NONFERROUS WIRE CLOTH AND OTHER WOVEN WIRE PRODUCTS, NOT PRODUCED BY WIREDRAWERS (ALSO SEE CODE 33575)</b>		
Iowa -----	4.4	(BB)	United States -----	81.6	66.1
Massachusetts -----	10.4	7.7	New Jersey -----	3.1	(BB)
Michigan -----	59.9	85.0	Ohio -----	9.3	11.9
New Jersey -----	3.9	3.0			
New York -----	17.8	13.3	<b>34966, FENCE AND FENCE GATES, NOT PRODUCED BY WIREDRAWERS (ALSO SEE CODE 33156)</b>		
North Carolina -----	6.7	(BB)	United States -----	145.1	131.3
Ohio -----	29.7	32.9	California -----	10.8	25.5
Pennsylvania -----	54.3	27.3	Illinois -----	10.6	(FF)
Texas -----	21.1	8.9	Massachusetts -----	5.3	1.2
Wisconsin -----	4.7	(BB)	New York -----	3.5	(BB)
			Ohio -----	6.2	(CC)
<b>34953, OTHER WIRE SPRINGS</b>			Texas -----	23.8	23.3
United States -----	534.8	500.1	<b>34967, STEEL NAILS AND SPIKES, NOT MADE BY WIREDRAWERS (ALSO SEE CODE 33152)</b>		
California -----	45.5	34.0	United States -----	206.6	88.1
Connecticut -----	7.0	10.9	California -----	5.1	(CC)
Florida -----	7.1	(BB)	Connecticut -----	9.0	(AA)
Illinois -----	33.4	29.5	Massachusetts -----	5.8	1.5
Indiana -----	30.5	35.2			
Massachusetts -----	21.5	15.6			
Michigan -----	44.7	122.0			
Mississippi -----	9.5	8.2			
New York -----	13.1	8.2			
North Carolina -----	34.0	26.4			
Ohio -----	35.7	17.2			
Oregon -----	4.0	(BB)			
Pennsylvania -----	19.1	13.5			
Tennessee -----	22.1	(AA)			
Texas -----	25.4	9.0			
Washington -----	2.9	(NA)			

See footnotes at end of table.



**Table 6b. Product Classes—Value of Shipments by All Producers for Specified States: 1982 and 1977—Con.**

[Million dollars. Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in table 2. Also, product classes are not shown if they are miscellaneous or "not specified by type" classes. Statistics for some States are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1982. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Product class and geographic area	1982 value of product shipments	1977 value of product shipments	Product class and geographic area	1982 value of product shipments	1977 value of product shipments
<b>34968, OTHER FABRICATED WIRE PRODUCTS, NOT PRODUCED BY WIREDRAWERS (ALSO SEE CODE 33159)</b>			<b>34992, COLLAPSIBLE TUBES</b>		
United States .....	1 089.6	626.0	United States .....	84.7	106.5
Alabama .....	10.8	9.5	New Jersey .....	13.8	21.0
Arkansas .....	14.2	(EE)			
California .....	109.3	46.4	<b>34993, FLAT METAL STRAPPING</b>		
Colorado .....	3.3	2.5	United States .....	271.6	272.6
Connecticut .....	45.3	11.7	California .....	24.6	23.2
Florida .....	11.4	2.8			
Georgia .....	15.7	3.3	<b>34995, METAL LADDERS</b>		
Illinois .....	110.8	45.6	United States .....	152.0	(NA)
Indiana .....	30.4	14.4	California .....	33.1	(NA)
Iowa .....	21.4	(EE)	Michigan .....	5.5	(NA)
Kansas .....	4.3	(AA)	New Jersey .....	5.1	(NA)
Kentucky .....	8.6	12.9	New York .....	2.9	(NA)
Maryland .....	12.8	3.3	Pennsylvania .....	25.0	(NA)
Massachusetts .....	10.1	(BB)	Wisconsin .....	2.9	(NA)
Michigan .....	67.0	73.5			
Minnesota .....	4.6	4.2	<b>34996, POWDER METALLURGY PARTS</b>		
Missouri .....	41.3	17.6	United States .....	441.3	(NA)
New Hampshire .....	2.8	(AA)	California .....	22.3	(NA)
New Jersey .....	40.7	38.2	Connecticut .....	11.3	(NA)
New York .....	82.4	79.8	Illinois .....	62.6	(NA)
North Carolina .....	30.9	26.5	Indiana .....	6.8	(NA)
Ohio .....	53.9	33.5	Massachusetts .....	26.1	(NA)
Oregon .....	11.1	(BB)	Michigan .....	44.8	(NA)
Pennsylvania .....	94.8	62.5	New Jersey .....	24.7	(NA)
Rhode Island .....	10.7	(CC)	New York .....	6.1	(NA)
South Carolina .....	14.2	(AA)	Ohio .....	58.9	(NA)
Tennessee .....	83.1	42.3	Pennsylvania .....	97.3	(NA)
Texas .....	41.8	10.8	Tennessee .....	12.6	(NA)
Vermont .....	2.5	(AA)	Texas .....	17.6	(NA)
Washington .....	22.6	3.7	Wisconsin .....	7.6	(NA)
Wisconsin .....	15.9	8.4			
<b>34971, CONVERTED UNMOUNTED ALUMINUM FOIL PACKAGING PRODUCTS</b>			<b>34998, ALL OTHER FABRICATED METAL PRODUCTS, N.E.C.</b>		
United States .....	654.5	386.7	United States .....	2 277.1	(NA)
California .....	17.0	14.5	Alabama .....	32.5	(NA)
			Arizona .....	5.9	(NA)
<b>34972, LAMINATED ALUMINUM FOIL FLEXIBLE PACKAGING</b>			Arkansas .....	32.6	(NA)
United States .....	775.5	496.9	California .....	211.1	(NA)
California .....	52.4	13.6	Colorado .....	33.4	(NA)
Illinois .....	19.6	10.8	Connecticut .....	55.3	(NA)
Kentucky .....	31.6	(FF)	Florida .....	42.4	(NA)
Massachusetts .....	17.2	19.0	Georgia .....	27.1	(NA)
Missouri .....	45.1	(FF)	Illinois .....	252.6	(NA)
New Jersey .....	52.1	42.6	Indiana .....	104.9	(NA)
New York .....	36.3	(EE)	Iowa .....	27.7	(NA)
North Carolina .....	76.4	(GG)	Kentucky .....	65.5	(NA)
Ohio .....	119.8	77.2	Louisiana .....	3.6	(NA)
Tennessee .....	14.0	(CC)	Maryland .....	13.4	(NA)
			Massachusetts .....	34.1	(NA)
<b>34973, CONVERTED FOIL FOR NONPACKAGING APPLICATIONS</b>			Michigan .....	150.2	(NA)
United States .....	324.4	165.1	Minnesota .....	36.7	(NA)
California .....	18.7	(CC)	Mississippi .....	9.3	(NA)
New Jersey .....	124.9	43.1	Missouri .....	25.2	(NA)
Ohio .....	52.7	52.7	Nebraska .....	18.1	(NA)
			New Hampshire .....	9.7	(NA)
<b>34991, SAFES AND VAULTS</b>			New Jersey .....	110.5	(NA)
United States .....	282.6	181.6	New Mexico .....	2.4	(NA)
California .....	29.2	19.3	New York .....	139.6	(NA)
Florida .....	11.0	(BB)	North Carolina .....	30.9	(NA)
New York .....	26.6	(EE)	Ohio .....	189.0	(NA)
Ohio .....	138.7	115.5	Oklahoma .....	31.8	(NA)
			Oregon .....	8.0	(NA)
			Pennsylvania .....	191.7	(NA)
			Rhode Island .....	42.6	(NA)
			South Carolina .....	5.4	(NA)
			Tennessee .....	38.1	(NA)
			Texas .....	118.0	(NA)
			Utah .....	3.8	(NA)
			Washington .....	19.1	(NA)
			West Virginia .....	3.4	(NA)
			Wisconsin .....	83.8	(NA)

Note: For 1977, the following value ranges (in million dollars) substitute for actual figures withheld to avoid disclosing data for individual companies: AA—less than \$2.0 but not 0; BB—\$2.0 to \$4.9; CC—\$5.0 to \$9.9; EE—\$10.0 to \$19.9; FF—\$20.0 to \$49.9; GG—\$50.0 or more.



**Table 6c. Product Classes—Value Shipped by All Producers: 1982 and Earlier Years**

[Million dollars. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

1982 product code	Product class	1982	1981 <sup>1</sup>	1980 <sup>1</sup>	1979 <sup>1</sup>	1978 <sup>1</sup>	1977	1972	1967
3493-	<b>Steel springs, except wire</b> -----	<b>511.3</b>	<b>532.9</b>	<b>499.0</b>	<b>663.2</b>	<b>656.8</b>	<b>571.0</b>	<b>361.8</b>	<b>264.0</b>
34931	Hot formed springs-----	395.8	369.2	345.5	502.9	524.5	454.2	279.1	(NA)
34932	Cold formed springs-----	94.8	144.8	140.5	148.2	109.8	94.3	56.9	(NA)
34930	Steel springs, except wire, n.s.k.-----	20.8	18.9	12.9	12.1	(S)	22.5	25.8	(NA)
3494-	<b>Valves and pipe fittings</b> -----	<b>8 705.1</b>	<b>8 788.0</b>	<b>7 916.0</b>	<b>7 093.5</b>	<b>5 973.8</b>	<b>5 403.0</b>	<b>2 891.6</b>	<b>2 091.9</b>
34944	Plumbing and heating valves and specialties-----	220.2	369.4	313.9	247.3	228.5	206.6	139.3	101.2
34945	Metal fittings, flanges, and unions for piping systems-----	1 491.2	1 613.2	1 500.3	1 389.6	1 120.7	1 018.8	602.2	484.7
34947	Automatic regulating and control valves-----	1 233.0	1 151.5	1 069.7	968.6	816.5	696.1	(NA)	(NA)
34948	Solenoid valves-----	206.1	230.9	200.5	206.8	139.2	114.8	(NA)	(NA)
34949	Nuclear valves-----	152.0							
3494A	Industrial valves-----	3 273.5							
3494B	Hydraulic valves, except aerospace type-----	435.3							
3494C	Pneumatic valves, except aerospace type-----	339.2							
3494D	Aerospace type hydraulic and pneumatic valves-----	262.2							
3494E	Fittings for metal and plastics tubing used in fluid power systems, except aerospace type-----	302.7	5 163.4	4 643.0	4 112.2	3 503.9	3 131.0	2 050.3	1 406.1
3494F	Hydraulic and pneumatic hose or tube end fittings and assemblies, except aerospace type-----	319.7							
3494G	Aerospace type hydraulic and pneumatic hose or tube end fittings-----	119.0							
3494H	Parts for fluid power valves-----	101.0							
34940	Valves and pipe fittings, n.s.k.-----	250.0	259.6	188.6	169.0	(S)	235.7	99.8	99.9
3495-	<b>Wire springs</b> -----	<b>1 064.2</b>	<b>994.4</b>	<b>962.7</b>	<b>1 052.2</b>	<b>1 035.2</b>	<b>933.0</b>	<b>566.1</b>	<b>465.1</b>
34952	Precision mechanical springs-----	480.7	530.7	492.5	504.1	451.7	392.0	250.5	211.0
34953	Other wire springs-----	534.8	414.4	439.3	513.3	541.8	500.1	312.0	254.1
34950	Wire springs, n.s.k.-----	48.7	49.4	30.8	34.9	(S)	40.9	3.6	(NA)
3496-	<b>Miscellaneous fabricated wire products</b> -----	<b>2 335.1</b>	<b>1 933.4</b>	<b>1 831.2</b>	<b>1 793.0</b>	<b>1 542.8</b>	<b>1 440.0</b>	<b>942.4</b>	<b>763.0</b>
34961	Noninsulated ferrous wire rope, cable, etc., not produced by wiredrawers (also see code 33151)-----	391.4	227.0	205.6	185.0	188.5	171.4	96.4	81.8
34964	Ferrous wire cloth and other woven wire products, not produced by wiredrawers (also see code 33157)-----	204.4	233.0	243.2	200.5	152.2	137.7	75.3	53.9
34965	Nonferrous wire cloth and other woven wire products, not produced by wiredrawers (also see code 33575)-----	81.6	71.8	55.1	70.9	61.8	66.1	49.8	53.8
34966	Fence and fence gates, not produced by wiredrawers (also see code 33156)-----	145.1	113.0	125.3	171.9	161.1	131.3	73.5	55.1
34967	Steel nails and spikes, not made by wiredrawers (also see code 33152)-----	206.6	128.8	128.8	100.4	93.8	88.1	(NA)	(NA)
34968	Other fabricated wire products, not produced by wiredrawers (also see code 33159)-----	1 089.6	1 015.1	948.0	931.5	763.0	626.0	(NA)	(NA)
34960	Miscellaneous fabricated wire products, n.s.k.-----	216.5	144.7	125.3	132.8	(S)	219.5	190.2	143.9
3497-	<b>Metal foil and leaf</b> -----	<b>1 758.0</b>	<b>1 506.5</b>	<b>1 410.1</b>	<b>1 315.2</b>	<b>1 299.4</b>	<b>1 070.3</b>	<b>511.8</b>	<b>385.6</b>
34971	Converted unmounted aluminum foil packaging products-----	654.5	595.0	533.9	498.0	472.3	386.7	197.3	(NA)
34972	Laminated aluminum foil flexible packaging-----	775.5	627.0	629.7	583.2	555.2	496.9	229.3	(NA)
34973	Converted foil for nonpackaging applications-----	324.4	277.6	240.0	227.3	249.9	165.1	67.7	(NA)
34970	Metal leaf and foil, n.s.k.-----	3.6	6.8	6.4	6.7	(S)	21.6	17.5	(NA)
34980	<b>Fabricated pipe and pipe fittings</b> -----	<b>3 035.3</b>	<b>2 889.0</b>	<b>2 443.1</b>	<b>2 248.5</b>	<b>2 039.3</b>	<b>1 698.1</b>	<b>670.5</b>	<b>486.3</b>
3499-	<b>Fabricated metal products, n.e.c.</b> -----	<b>4 210.9</b>	<b>5 424.0</b>	<b>4 948.3</b>	<b>4 460.6</b>	<b>4 212.0</b>	<b>3 390.3</b>	<b>2 131.8</b>	<b>1 303.3</b>
34991	Safes and vaults-----	282.6	317.5	293.5	236.2	214.0	181.6	146.2	79.5
34992	Collapsible tubes-----	84.7	137.0	134.1	121.2	111.5	106.5	49.1	50.9
34993	Flat metal strapping-----	271.6	421.7	364.1	422.4	333.5	272.6	167.8	(NA)
34995	Metal ladders-----	152.0							
34996	Powder metallurgy parts-----	441.3	3 881.4	3 645.8	3 291.7	2 651.4	2 300.0	1 390.5	(NA)
34998	All other fabricated metal products, n.e.c.-----	2 277.1							
34990	Fabricated metal products, n.e.c., n.s.k.-----	701.5	666.4	510.8	389.1	(S)	529.6	378.2	(NA)

<sup>1</sup>Figures are estimates derived from a representative sample of manufacturing establishments canvassed in annual survey of manufactures and, therefore, may differ from results that would be obtained from a complete canvass of all manufacturing establishments. Standard errors associated with estimates are published in annual survey of manufactures volumes for this period.

**Table 7. Materials Consumed by Kind: 1982 and 1977**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
	<b>INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE</b>				
	<b>Materials, parts, containers, and supplies</b> -----	<b>(X)</b>	<b>162.8</b>	<b>(X)</b>	<b>235.7</b>
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes----- 1,000 s tons--	21.1	7.7	(S)	40.9
331012	Sheet and strip----- do--	**13.5	13.1	15.6	10.5
331015	Structural shapes----- do--	(D)	( <sup>9</sup> )	(D)	(D)
331017	Wire and wire products----- do--	(S)	10.2	32.5	17.9
331056	All other carbon steel mill shapes and forms----- do--	(S)	31.1	(D)	(D)
	Alloy steel, except stainless:				
331021	Bars and bar shapes----- do--	125.1	65.6	250.9	105.6
331029	All other alloy steel mill shapes and forms----- do--	*8.2	3.8	2.8	3.0
	Stainless steel mill shapes and forms:				
331033	Sheet and strip----- do--	**1.8	7.2	2.5	7.4
331050	All other stainless steel mill shapes and forms----- do--	(S)	1.8	(S)	2.8
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes----- mil lb--	(S)	.3	(D)	(D)
335143	Plate, sheet, and strip, including military cups and discs----- do--	.1	.2	.2	.6
335152	Pipe and tube----- do--	-	-	-	-

See footnotes at end of table.



**Table 7. Materials Consumed by Kind: 1982 and 1977—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
	<b>INDUSTRY 3493, STEEL SPRINGS, EXCEPT WIRE</b> —Con.				
	Mill shapes and forms, except castings —Con.				
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil ----- mil lb..	(D)	(D)	(D)	(D)
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	-	-	-	-
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ----- do..	(D)	(D)	(D)	(D)
332045	Steel castings (rough and semifinished) ----- 1,000 s tons..	(D)	(D)	1.7	1.5
345001	Bolts, nuts, screws, rivets, and screw machine products -----	(X)	3.6	(X)	6.2
970099	All other materials and components, parts, containers, and supplies -----	(X)	18.3	(X)	25.0
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> -----	(X)	10.7	(X)	11.2
	<b>INDUSTRY 3494, VALVES AND PIPE FITTINGS</b>				
	Materials, parts, containers, and supplies -----	(X)	3 211.5	(X)	2 051.6
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes ----- 1,000 s tons..	**329.1	187.9	*212.0	87.4
331012	Sheet and strip ----- do..	*40.6	20.6	**30.1	11.7
331013	Plates ----- do..	**51.3	24.2	(S)	28.8
331053	All other ----- do..	44.9	49.7	*76.4	41.3
	Alloy steel, except stainless:				
331021	Bars and bar shapes ----- do..	(S)	40.2	*20.1	17.2
331029	All other ----- do..	(S)	23.5	(S)	10.4
	Stainless steel:				
331033	Sheet and strip ----- do..	**19.7	31.7	*5.3	13.0
331050	All other ----- do..	(S)	134.5	**24.3	59.9
335792	Insulated copper wire and cable, except magnet wire ----- mil lb..	3.9	2.8	(NA)	( <sup>4</sup> )
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes ----- do..	(S)	137.5	*170.9	119.5
335143	Plate, sheet, and strip, including military cups and discs ----- do..	(S)	6.2	*2.6	2.4
335152	Pipe and tube ----- do..	*18.9	17.0	37.9	33.5
	Aluminum and aluminum-base alloy:				
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	(S)	16.0	*14.7	12.9
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ----- do..	**8	1.5	(S)	2.6
	Primary metals:				
331051	Pig iron, excluding silvery iron ----- 1,000 s tons..	*24.0	8.7	(S)	9.3
333401	Aluminum and aluminum-base refinery shapes, (ingot, slug, etc.) ----- do..	(S)	2.3	4.9	5.1
333122	Copper and copper-base alloy refinery shapes ----- do..	*48.9	72.2	*34.6	44.8
	Scrap, excluding home scrap:				
190023	Iron and steel ----- do..	342.1	34.6	**315.5	27.2
190024	Copper and copper-base alloy ----- do..	*13.8	16.3	12.3	13.5
	Castings (rough and semifinished):				
332011	Iron (gray and malleable):				
	Purchased ----- do..	(S)	197.8	**139.8	126.0
	Produced and consumed ----- do..	81.9	(X)	(X)	(X)
332045	Steel:				
	Purchased ----- do..	**98.5	306.3	*71.8	164.8
	Produced and consumed ----- do..	4.8	(X)	(X)	(X)
336100	Aluminum and aluminum-base alloy:				
	Purchased ----- mil lb..	**77.5	94.0	**25.0	32.3
	Produced and consumed ----- do..	8.9	(X)	(X)	(X)
336200	Copper and copper-base alloy:				
	Purchased ----- do..	(S)	89.8	*63.7	80.1
	Produced and consumed ----- do..	24.4	(X)	(X)	(X)
336902	Other nonferrous:				
	Purchased ----- do..	*34.2	35.4	(X)	( <sup>4</sup> )
	Produced and consumed ----- do..	2.8	(X)	(X)	(X)
346200	Iron and steel forgings ----- 1,000 s tons..	**108.5	153.0	*74.1	88.8
345001	Bolts, nuts, screws, rivets, and screw machine products -----	(X)	168.6	(X)	121.4
349403	Metal valves and fittings purchased for further assembly -----	(X)	145.1	(X)	36.1
362110	Electric motors and generators less than 1 hp (timing motors, synchronous and subsynchronous) ----- millions..	(S)	8.0	**122.9	6.5
265001	Paperboard boxes and containers -----	(X)	19.6	(X)	14.8
306902	Fabricated rubber products, except tires, tubes, hose, belting, and gaskets -----	(X)	28.4	(X)	21.6
307902	Fabricated plastics products, except gaskets -----	(X)	17.6	(X)	17.2
329300	Gaskets (all types) -----	(X)	18.5	(X)	12.1
346901	Metal stampings -----	(X)	19.2	(X)	13.3
349012	Fabricated wire products -----	(X)	13.2	(X)	5.9
970099	All other materials and components, parts, containers, and supplies -----	(X)	868.7	(X)	445.4
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> -----	(X)	200.9	(X)	314.8
	<b>INDUSTRY 3495, WIRE SPRINGS</b>				
	Materials, parts, containers, and supplies -----	(X)	441.9	(X)	419.1
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes ----- 1,000 s tons..	(S)	.7	4.3	1.8
331012	Sheet and strip ----- do..	(S)	38.2	158.7	72.2
331015	Structural shapes ----- do..	( <sup>3</sup> )	( <sup>3</sup> )	(S)	( <sup>3</sup> )
331017	Wire and wire products ----- do..	357.1	214.3	**406.1	201.6
331056	All other ----- do..	*6.4	37.8	(S)	329.6
	Alloy steel, except stainless:				
331021	Bars and bar shapes ----- do..	(S)	.9	(S)	2.9
331029	All other ----- do..	*33.2	21.9	**4.7	6.3
	Stainless steel mill shapes and forms:				
331033	Sheet and strip ----- do..	(S)	7.2	**2.8	7.5
331050	All other ----- do..	**2.9	12.3	**3.1	9.7

See footnotes at end of table.



Table 7. **Materials Consumed by Kind: 1982 and 1977—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
	<b>INDUSTRY 3495, WIRE SPRINGS—Con.</b>				
	Mill shapes and forms, except castings —Con.				
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes ----- mil lb..	**2.1	3.1	(S)	2.2
335143	Plate, sheet, and strip, including military cups and discs ----- do..	(S)	1.8	.6	.8
335152	Pipe and tube ----- do..			-	-
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil ----- do..	(S)	1.1	.1	.1
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	(Z)	(Z)	(S)	1.3
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ----- do..	**1.4	2.3	*.6	.9
332045	Steel castings (rough and semifinished) ----- 1,000 s tons..	(S)	( <sup>6</sup> )	(NA)	( <sup>6</sup> )
345001	Bolts, nuts, screws, rivets, and screw machine products -----	(X)	3.8	(X)	( <sup>6</sup> )
970099	All other materials and components, parts, containers, and supplies -----	(X)	<sup>5</sup> 98.7	(X)	<sup>6</sup> 45.8
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> -----	(X)	27.8	(X)	36.4
	<b>INDUSTRY 3496, MISCELLANEOUS FABRICATED WIRE PRODUCTS</b>				
	Materials, parts, containers, and supplies -----	(X)	1 035.1	(X)	649.3
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes ----- 1,000 s tons..	(S)	10.9	*38.4	11.6
331012	Sheet and strip ----- do..	(S)	24.3	*55.3	20.1
331015	Structural shapes ----- do..	(S)	15.7	*12.3	4.9
331017	Wire and wire products ----- do..	(S)	441.1	(S)	199.4
331056	All other ----- do..	63.3	26.5	*39.7	15.7
	Alloy steel, except stainless:				
331021	Bars and bar shapes ----- do..	*1.0	.8	*.9	1.0
331029	All other ----- do..	*9.3	7.9	(S)	12.2
	Stainless steel:				
331033	Sheet and strip ----- do..	(S)	8.5	(S)	3.4
331050	All other ----- do..	(S)	41.4	(S)	20.7
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes ----- mil lb..	(S)	16.7	(S)	4.4
335143	Plate, sheet, and strip, including military cups and discs ----- do..	.3	.6	**3	.5
335152	Pipe and tube ----- do..	*.8	.8	(S)	.2
	Aluminum and aluminum-base alloy:				
335301	Sheet, plate, and foil ----- do..	(S)	4.7	(S)	.3
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. ----- do..	(S)	1.9	*.4	.4
335008	All other wire, rolled rod and bar, powder, welded tubing, etc. ----- do..	**10.0	11.5	15.7	14.0
332045	Steel castings, (rough and semifinished) ----- 1,000 s tons..	(S)	1.7	(S)	3.4
345001	Bolts, nuts, screws, rivets, and screw machine products -----	(X)	4.8	(X)	3.5
970099	All other materials and components, parts, containers, and supplies -----	(X)	270.4	(X)	148.5
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> -----	(X)	144.9	(X)	185.1
	<b>INDUSTRY 3497, METAL FOIL AND LEAF</b>				
	Materials, parts, containers, and supplies -----	(X)	1 062.8	(X)	559.6
	Aluminum and aluminum-base alloy:				
335335	Plain foil ----- mil lb..	**135.7	193.4	202.5	180.5
335303	Sheet and plate ----- do..				
335008	All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, extruded shapes, etc.) ----- do..	372.6	286.4	7.2	6.2
349702	Aluminum foil, converted (quantity represents metal content) ----- do..	30.7	57.3	(S)	35.8
307903	Plastics products consumed in the form of sheets, rods, tubes, and other shapes -----	(X)	54.0	(X)	26.5
260091	Paper and paperboard containers, including shipping sacks and other paper packaging supplies -----	(X)	132.0	(X)	39.4
970099	All other materials and components, parts, containers, and supplies -----	(X)	337.1	(X)	232.4
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> -----	(X)	2.6	(X)	38.8
	<b>INDUSTRY 3498, FABRICATED PIPE AND FITTINGS</b>				
	Materials, parts, containers, and supplies -----	(X)	1 485.1	(X)	846.5
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes ----- 1,000 s tons..	(S)	13.2	50.6	24.3
331012	Sheet and strip ----- do..	*54.7	24.7	32.8	10.3
331013	Plates ----- do..	**111.3	55.8	47.0	12.5
331015	Structural shapes ----- do..	(S)	96.4	(S)	17.2
331016	Pipe ----- do..	**780.5	562.3	**608.5	286.7
331017	Wire and wire products ----- do..	**1.6	1.5	(S)	1.0
331084	All other ----- do..	46.1	60.7	**52.7	30.0
	Alloy steel, except stainless:				
331021	Bars and bar shapes ----- do..	(S)	14.5	(S)	2.5
331026	Pipe ----- do..	(S)	53.8	105.4	58.9
331029	All other ----- do..	*8.3	23.8	(S)	6.0
	Stainless steel:				
331033	Sheet and strip ----- do..	(S)	2.6	(S)	11.7
331036	Pipe ----- do..	(S)	46.2	8.9	26.4
331050	All other ----- do..	(S)	7.0	(S)	23.2
335792	Insulated copper wire and cable, except magnet wire ----- mil lb..	(D)	(D)	.2	.4
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes ----- do..	(S)	3.5	(S)	1.7
335143	Plate, sheet, and strip, including military cups and discs ----- do..	(S)	.8	(S)	2.0

See footnotes at end of table.



Table 7. **Materials Consumed by Kind: 1982 and 1977—Con.**

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1982 material code	Material	1982		1977	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
	<b>INDUSTRY 3498, FABRICATED PIPE AND FITTINGS—Con.</b>				
	Mill shapes and forms, except castings —Con.				
	Copper and copper-base alloy —Con.				
335152	Pipe and tube ..... mil lb..	**32.7	32.4	11.7	13.1
	Aluminum and aluminum-base alloys:				
335301	Sheet, plate, and foil ..... do..	1.7	1.9	(S)	1.0
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. .... do..	(S)	31.8	(?)	(?)
335008	All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, etc.) ..... do..	5.8	5.3	78.9	712.5
349450	Metal fittings, flanges, and unions for piping systems ..... do..	(X)	66.1	(X)	75.8
	Castings (rough and semifinished):				
	Iron (gray and malleable):				
332011	Purchased ..... 1,000 s tons..	**8.4	8.9	**3.3	5.0
	Produced and consumed ..... do..	.5	(X)	(X)	(X)
332045	Steel:				
	Purchased ..... do..	(D)	(D)	2.1	1.9
	Produced and consumed ..... do..	-	(X)	(X)	(X)
336100	Aluminum and aluminum-base alloy:				
	Purchased ..... mil lb..	(S)	.2	.3	.5
	Produced and consumed ..... do..	-	(X)	(X)	(X)
336200	Copper and copper-base alloy:				
	Purchased ..... do..	*1.2	3.5	1.5	2.6
	Produced and consumed ..... do..	.1	(X)	(X)	(X)
346200	Iron and steel forgings ..... 1,000 s tons..	(S)	8.9	(S)	6.5
346310	Aluminum and aluminum-base alloy forgings ..... mil lb..	(S)	.8	(D)	(D)
333010	Nonferrous plating metals (chromium, nickel, zinc, etc.) ..... do..	(D)	(D)	(D)	(D)
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and other shapes ..... mil lb..	**10.2	4.0	(S)	5.1
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels ..... do..	(S)	.9	(S)	.9
307903	Plastics products consumed in the form of sheets, rods, tubes, and other shapes ..... do..	(X)	7.0	(X)	2.8
346901	Metal stampings ..... do..	(X)	.8	(X)	.7
339915	Metal powders ..... mil lb..	(D)	(D)	(X)	( <sup>8</sup> )
970099	All other materials and components, parts, containers, and supplies ..... do..	(X)	170.3	(X)	*118.8
971000	Materials, parts, containers, and supplies, n.s.k. <sup>2</sup> ..... do..	(X)	152.8	(X)	83.2
	<b>INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.</b>				
	Materials, parts, and supplies ..... do..	(X)	1 763.8	(X)	1 439.3
	Mill shapes and forms, except castings:				
	Carbon steel:				
331011	Bars and bar shapes ..... 1,000 s tons..	*298.5	132.0	(S)	22.3
331012	Sheet and strip ..... do..	663.0	321.4	*854.9	277.5
331013	Plates ..... do..	**125.2	60.3	**97.1	34.4
331015	Structural shapes ..... do..	41.1	17.4	(S)	11.5
331016	Pipe ..... do..	**7.3	4.8	(S)	7.5
331017	Wire and wire products ..... do..	(S)	10.1	**15.1	9.6
331084	All other carbon steel mill shapes and forms ..... do..	165.8	19.7	(S)	20.8
	Alloy steel, except stainless:				
331021	Bars and bar shapes ..... do..	(S)	7.2	(S)	6.6
331026	Pipe ..... do..	(S)	1.6	(S)	.3
331029	All other alloy steel mill shapes and forms ..... do..	*37.8	23.3	24.4	19.5
	Stainless steel:				
331033	Sheet and strip ..... do..	**13.2	30.3	**10.5	18.7
331036	Pipe ..... do..	**4	.9	**2.4	4.6
331050	All other stainless steel mill shapes and forms ..... do..	(S)	7.2	(S)	14.1
335792	Insulated copper wire and cable, except magnet wire ..... mil lb..	(S)	.9	.2	.8
	Copper and copper-base alloy:				
335102	Rod, bar, and mechanical wire, including extruded and/or drawn shapes ..... do..	*11.9	12.0	(S)	4.5
335143	Plate, sheet, and strip, including military cups and discs ..... do..	(S)	3.7	(S)	4.9
335152	Pipe and tube ..... do..	(S)	.4	(S)	2.5
	Aluminum and aluminum-base alloys:				
335301	Sheet, plate, and foil ..... do..	(S)	36.9	39.3	32.6
335405	Extruded shapes, including extruded rod, bar, pipe, tube, etc. .... do..	*54.3	58.6	61.3	49.8
335008	All other aluminum mill shapes and forms (wire, rolled rod and bar, powder, welded tubing, etc.) ..... do..	**14.2	13.2	(S)	12.5
349450	Metal fittings, flanges, and unions for piping systems ..... do..	(X)	.3	(X)	.6
	Castings (rough and semifinished):				
	Iron (gray and malleable):				
332011	Purchased ..... 1,000 s tons..	*13.2	17.7	*15.5	19.4
	Produced and consumed ..... do..	10.6	(X)	(X)	(X)
332045	Steel:				
	Purchased ..... do..	(S)	13.3	(S)	4.2
	Produced and consumed ..... do..	(Z)	(X)	(X)	(X)
336100	Aluminum and aluminum-base alloy:				
	Purchased ..... mil lb..	(S)	6.2	**4.0	3.1
	Produced and consumed ..... do..	.1	(X)	(X)	(X)
336200	Copper and copper-base alloy:				
	Purchased ..... do..	**1.4	2.6	**2.0	3.4
	Produced and consumed ..... do..	-	(X)	(X)	(X)
336902	Other nonferrous:				
	Purchased ..... do..	*13.5	10.2	(X)	( <sup>9</sup> )
	Produced and consumed ..... do..	(Z)	(X)	(X)	(X)
346200	Iron and steel forgings ..... 1,000 s tons..	(S)	4.9	(S)	1.4
346310	Aluminum and aluminum-base alloy forgings ..... mil lb..	(S)	1.4	(S)	.9
333010	Nonferrous plating metals (chromium, nickel, zinc, etc.) ..... do..	(X)	3.2	(X)	6.7
339915	Metal powders ..... do..	*77.2	31.8	(X)	( <sup>9</sup> )
282104	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc., but excluding sheets, rods, tubes, and other shapes ..... do..	**12.0	7.4	**24.3	8.9
285101	Paints, varnishes, lacquers, shellacs, japans, and enamels ..... 1,000 gal..	*1 518.7	14.8	*1 474.0	9.2
307903	Plastics products consumed in the form of sheets, rods, tubes, and other shapes ..... do..	(X)	14.3	(X)	12.5

See footnotes at end of table.



**Table 7. Materials Consumed by Kind: 1982 and 1977—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For further explanation, see Cost of Materials in appendix. For meaning of abbreviations and symbols, see introductory text]

1982 material code	Material	1982		1977	
		Quantity <sup>1</sup>	Delivered cost (million dollars)	Quantity <sup>1</sup>	Delivered cost (million dollars)
	<b>INDUSTRY 3499, FABRICATED METAL PRODUCTS, N.E.C.—Con.</b>				
346901	Metal stampings -----	(X)	13.3	(X)	7.8
970099	All other materials and components, parts, containers, and supplies -----	(X)	455.8	(NA)	<sup>a</sup> 436.5
971000	Materials, parts, and supplies, n.s.k. <sup>2</sup> -----	(X)	404.7	(X)	369.7

<sup>1</sup>For some establishments, data have been estimated from central unit values which are based on quantity-cost relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: \* 10 to 19 percent estimated; \*\* 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by (S).

<sup>2</sup>Total cost of materials of establishments that did not report detailed materials data, including establishments that were not mailed a form.

<sup>3</sup>For 1982 and 1977, material code 331015 is included with material code 331056.

<sup>4</sup>For 1977, material codes 335792 and 336902 were combined with material code 970099.

<sup>5</sup>For 1982, material code 332045 is included with material code 970099.

<sup>6</sup>For 1977, material codes 332045 and 345001 were combined with material code 970099.

<sup>7</sup>For 1977, material code 335405 was combined with material code 335008 to avoid disclosing data for individual companies.

<sup>8</sup>For 1977, material code 339915 was combined with material code 970099 to avoid disclosing data for individual companies.

<sup>9</sup>For 1977, material codes 336902 and 339915 were included with material code 970099.



# APPENDIX A.

## Explanation of Terms

This appendix is in two sections. Section 1 includes items which were requested of all establishments that were mailed census of manufactures forms including annual survey of manufactures (ASM) forms. Note that this section also includes several items (number of establishments and companies, value added, classes of products, and specialization and coverage ratios) that were not included on the report forms but were derived from information collected on the forms. Section 2 covers supplementary items that were requested only from establishments included in the ASM sample. Results of the supplementary ASM inquiries are included in tables 3c and 3d of this report.

### SECTION 1. ITEMS COLLECTED OR DERIVED BASED ON ALL CENSUS OF MANUFACTURES (INCLUDING ASM) REPORT FORMS

**Number of establishments and companies**—As discussed in the Introduction, a separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operates at different physical locations, even if the individual locations are producing the same line of goods, a separate report was requested for each location. If the company operates in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on the number of custodial employees, capital expenditures, inventories, or any shipments from inventories during the portion of the year the plant was in operation.

In this report, data are shown for establishments in operation at any time during the year. A comparison with the number of establishments in operation at the end of the year will be provided in the Introduction to Part 1 of the General Summary subject report.

**Employment and related items**—The regular report forms requested separate information on production workers as of a payroll period for each quarter of the year and on other employees as of the payroll period which included the 12th of March.

**All employees**—This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period ending nearest the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

**Production workers**—This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

**All other employees**—This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It includes sales (including driver salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office function, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment who are engaged in the construction of major additions or alterations to the plant and who are utilized as a separate work force.

In addition to reports sent to operating manufacturing establishments, information on employment during the payroll period which included March 12 and annual payrolls was also requested of auxiliary units (e.g., administrative offices, warehouses, and research and development laboratories) of multiestablishment companies. However, these figures are not included in the totals for individual industries shown in this report. They are included in the general summary and geographic area reports and in the final bound volumes as a separate category.

**Payrolls**—This item includes the gross earnings of all employees on the payroll of operating manufacturing establishments paid in the calendar year 1982. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, all bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers



of corporations, but excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payroll of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' Social Security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' supplemental labor costs, both those required by Federal and State laws and those incurred voluntarily or as part of collective bargaining agreements. (Supplemental labor costs are explained later in this appendix.)

As in the case of employment figures, the payrolls of separate auxiliary units of multiestablishment companies are not included in the totals for individual industries or industry groups.

**Production-worker hours**—This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

**Cost of materials**—This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

The important components of this cost item are (1) all raw materials, semifinished goods, parts, components, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year, (2) electric energy purchased, (3) fuels consumed for heat, power, or the generation of electricity, (4) work done by others on materials or parts furnished by manufacturing establishments (contract work), and (5) products bought and resold in the same condition. (See discussion of duplication of data below.)

**Specific materials consumed**—In addition to the total cost of materials, which every establishment was required to report, information was also collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. Information on the specific materials consumed is shown in table 7 if appropriate to the industry. Establishments consuming less than a specified amount (usually \$10,000) of a specific material were not requested to report consumption of that material separately. Also, the cost of materials for the small establishments for which either administrative records or short forms were used was imputed as "not specified by kind." (See the Introduction for the importance of administrative records in the industry.)

**Value of shipments**—This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and resold without further

processing. Included are all items made by or for the establishments from materials owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of "all other costs" (including company overhead) and profit. (See discussion of duplication of data below.)

**Individual products**—As in previous censuses, data were collected for almost all industries on the quantity and value of individual products shipped. In the 1982 census program, information was collected on the output of approximately 11,000 individual product items. The term "product," as used in the census of manufactures, represents the finest level of detail for which output information was requested. Consequently, it is not necessarily synonymous with the term "product" as used in the marketing sense. In some cases it may be much more detailed and, in other cases, it is more aggregative. For example, "pharmaceutical preparations" was distributed into over 100 items; whereas, "motor gasoline" was reported as a single item.

Approximately 6,000 of the product items were listed separately on the 1982 census report forms. Data for about 5,000 products were obtained in the monthly, quarterly, or annual surveys comprising the Current Industrial Reports series of the Census Bureau. Totals for the year 1982 for these items, as derived from the commodity surveys, are shown in the "products shipped" table (table 6a) together with the tieline total value collected in the census for reconciliation purposes.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1977 information is presented for most products.

Typically, both quantity and value of shipments information was collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers was also collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant was collected. Typically, the information on production was also collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

**Classes of products**—To summarize the product information, the separate products were aggregated into classes of products that, in turn, were grouped into all primary products of each industry. The code structure used is a seven-digit number for the



individual product, a five-digit number for the class of product, and a four-digit number for the total primary products in an industry. (See Introduction, Industry Classification of Establishments, for application of the coding structure to the assignment of SIC codes for establishments.)

In the 1982 census, the 11,000 products were grouped into approximately 1,500 separate classes on the basis of general similarity of manufacturing processes, types of materials used, and the like. However, the grouping of products was affected by the economic significance of the class and, in some cases, dissimilar products were grouped because the products were not sufficiently significant to warrant separate classes.

**Duplication in cost of materials and value of shipments**—The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication, since the products of some industries are used as materials by others. With some important exceptions, such as for motor vehicles and parts, this duplication is not significant at the four-digit industry level. However, it is significant at the two-digit and three-digit industry group level because these totals often include industries that represent successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the "Food" group and the addition of pulp mills to paper mills in the "Paper and Allied Products" group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the census of manufactures.

**Value added by manufacture**—This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

Because of the change in instructions for reporting inventories for 1982, the 1982 figure for value added is not strictly comparable to prior-year data. This is explained more fully in the inventories section below.

"Value added" avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

**New and used capital expenditures**—For establishments in operation and establishments under construction but not yet in operation, manufacturers were asked to report their new expenditures for (1) permanent additions and major alterations to manufacturing establishments, and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

The totals for new expenditures exclude that portion of expenditures leased from nonmanufacturing concerns, new facilities owned by the Federal Government but operated under

contract by private companies, and plant and equipment furnished to the manufacturer by communities and nonprofit organizations. Also excluded are expenditures for used plant and equipment (although reported in the census), expenditures for land, and cost of maintenance and repairs charged as current operating expenses.

Manufacturers were also requested to report the value of all used buildings and equipment purchased during the year at the purchase price. For any equipment or structure transferred to the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. Furthermore, if the establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported under used capital expenditures.

Total expenditures for used plant and equipment is a universe figure; i.e., it is collected on all census forms. However, the breakdown of this figure between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form and is subject to sampling error (see table 3d). The data for total new capital expenditures, new building expenditures, and new machinery expenditures, as well as the data for total used expenditures, are shown in both tables 3a and 3d. The figure in table 3a is a census universe total and may differ from the results of the ASM sample shown in table 3d. Since the figures in table 3d are subject to sampling error, they are not considered as reliable as the universe figures.

**End-of-year inventories**—Respondents were asked to report their 1981 and 1982 end-of-year inventories at cost or market. Effective with the 1982 Economic Censuses, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). In 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

Because of this change in reporting instructions, the 1982 data for inventories and value added by manufacture included in the tables of this report are not comparable to the prior-year data shown in table 1a of this report and in historical census of manufactures and annual survey of manufactures publications. Inventories and value added data estimated on a basis comparable to the historical data, using the reported information for 1982, are shown in footnote 4 of table 1a. However, the end-of-1981 figure shown in this footnote may differ from the corresponding value published as part of the 1981 Annual Survey of Manufactures.

This difference at the four-digit SIC level is due primarily to the effects of industry shifts. As described in the Industry Classification of Establishments section of the Introduction, ASM noncertainty plants are allowed to shift from one industry to another in a census year; whereas, they are "frozen" in a particular industry in ASM years. Other explanations for this difference include the effects of sampling and processing errors and revisions to end-of-1981 data reported by respondents.

In using inventory data by stage of fabrication for "all industries" and at the two-digit industry level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by another establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw



materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for individual industries, industry groups, and "all manufacturing," which are aggregates of figures reported by establishments in specified industries.

**Specialization and coverage ratios**—These items are not collected on the report forms but are derived from the data shown in table 5b. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

As noted in the Introduction, an establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary

products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in tables 1a through 5a and data on product shipments shown in tables 6a through 6c.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## SECTION 2. ITEMS COLLECTED ONLY ON ASM REPORT FORMS

**Supplemental labor costs**—Supplemental labor costs are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees. While the excluded items do benefit employees and all or part of their cost generally is similar to the items covered in the ASM labor costs statistics, accounting records do not generally provide reliable figures on net employee benefits of these types.

**Cost of purchased services**—ASM establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, and communication services. Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment, such as painting, roof repairs, replacing parts, and overhauling equipment. Such payments made to other establishments of the same company and for repair and maintenance of any leased property are also included. Extensive repairs or reconstruction that were capitalized are considered capital expenditures for used buildings and machinery and are, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force are also excluded.

The response coverage ratio shown in table 3d for each of the three types of purchased services listed above is a measure of the extent to which respondents reported for each item. It is derived for each item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight; see section 3) for those ASM establishments that reported the

specific inquiry to the weighted total employment for all ASM establishments classified in the industry.

**Electric energy used for heat and power**—Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy and quantity of generated-less-sold electric energy were collected only on the ASM forms. The cost and quantity of purchased electric energy represent the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

**Beginning- and end-of-year depreciable assets**—The data encompass all fixed depreciable assets on the books of establishments at the beginning and at the end of the year. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are non-depreciable capital assets, including inventories and intangible assets, such as patent rights and royalties. Also excluded are land and depletable assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year, rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress. In addition, respondents were requested to make certain that assets at the beginning of the year plus new and used capital expenditures, less retirements, equalled assets at the end of the year.

**New and used capital expenditures**—The data for total new capital expenditures, new building expenditures, new machinery expenditures, and total used capital expenditures are collected on all census forms. However, the breakdown between expenditures for used buildings and other structures and expenditures for used machinery and equipment is collected only on the ASM form. (See further explanation on capital expenditures in section 1.)



**Breakdown of new capital expenditures for machinery and equipment**—ASM establishments were requested to separate their capital expenditures for new machinery and equipment into (1) automobiles, trucks, etc., for highway use, (2) computers and peripheral data processing equipment, and (3) all other.

The category "automobiles, trucks, etc., for highway use" is intended to measure expenditures for vehicles designed for highway use that were acquired through a purchase or lease-purchase agreement. Vehicles normally operating off public highways (vehicles specifically designed to transport materials, property, or equipment on mining, construction, logging, and petroleum development projects) are excluded from this item.

The "not specified by kind" or n.s.k. item for expenditures for new machinery and buildings, shown in table 3d, represents the total machinery and equipment expenditures for establishments that did not break down their expenditures for the three specific categories. This means that for most industries the specific categories are understated.

**Retirements**—Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during 1982. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent was also requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

**Rental payments**—This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets, and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company, and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

**Depreciation charges**—This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.



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## APPENDIX B.

# Annual Survey of Manufactures (ASM) Sampling and Estimating Methodologies

### DESCRIPTION OF SURVEY SAMPLE

The Annual Survey of Manufactures (ASM) contains two components. The mail portion of the survey is a probability sample of about 55,000 manufacturing establishments selected from a total of about 225,000 establishments. These 225,000 establishments represent all manufacturing establishments of multiunit companies and all single-unit manufacturing establishments with five employees or more tabulated in the 1977 Census of Manufactures. This mail portion is supplemented by a Social Security Administration list of new manufacturing establishments opened after 1977. The individual establishments were defined as the sampling unit for this sample. This is a change from the previous ASM sample when companies were used as the sampling unit. The implication of this change is that the probability of selection of any establishment relates only to the size of the establishment itself and is independent of the size of the company with which the establishment is affiliated. The efficiencies associated with the change to an establishment sample have made it possible to reduce the mail sample panel from 70,000 establishments in 1978 to 55,000 establishments in the current panel.

The nonmail portion of the survey includes all single-unit establishments that were tabulated with less than five employees in the 1977 Census of Manufactures. Although this portion contained approximately 125,000 establishments, it accounted for less than 2 percent of the estimate for total value of shipments at the total manufacturing level. This portion was not sampled; rather, the data for every establishment in this group were estimated based on selected information obtained annually from the administrative records of other Federal agencies. This administrative record information, which includes payroll, total employment, industry classification, and physical location of the establishment, was obtained under special conditions, which safeguard the confidentiality of both tax and census records. Estimates for data for these small establishments were developed using industry averages in conjunction with the administrative information.

The corresponding estimates for the mail and nonmail establishments were added together, along with the adjusted base-year differences as defined in Description of Estimating Procedures below. The remaining description of the survey sample relates only to the mail portion of the ASM sample.

All establishments with 250 employees or more in the 1977 census were included in the survey panel with certainty. These establishments collectively account for approximately 65 percent of the total value of shipments for manufacturing establishments in the 1977 census. Smaller establishments were sampled with probabilities ranging from 1.000 down to 0.005 in accordance with mathematical theory for optimum allocation of a sample.

The probabilities of selection assigned to the smaller establishments were proportional to measures of size determined for each establishment. For establishments included in the 1977 Census of Manufactures, the measure of size depended directly upon each establishment's 1977 product class values and the

historic variability of the year-to-year shipments of each product class. Roughly equivalent measures of size were assigned to postcensus birth establishments based on their industry codes and anticipated payroll and employment.

The method of assigning measures of size was used in order to maximize the precision (that is, minimize the variance of estimates of the year-to-year change) in the value of product class shipments. Implicitly, it also gave weight to differences in employment, value added, and other general statistics, for these are highly correlated with value of shipments. Individual sample selection probabilities were obtained by multiplying each establishment's final measure of size by an overall sampling fraction coefficient calculated to yield a total expected sample size.

The sample selection procedure gave each establishment in the sampling frame an independent chance of selection. This method of independent selection permits the rotation of establishments into and out of a given sample panel without introducing a bias into the survey estimates.

### DESCRIPTION OF ESTIMATING PROCEDURES

Most of the ASM estimates for the years 1978-1981 were computed using a modified "difference estimate" formula. For each item, a base-year difference was developed. This base-year difference is equal to the difference between the 1977 census published number for an item total and the linear ASM estimate of the total for 1977. The ASM linear estimate was obtained by multiplying each sample establishment's data by its sample weight (the reciprocal of its probability of selection) and summing the weighted values.

This base-year difference was then adjusted to reflect the estimated growth at the four-digit or, in the case of product classes, five-digit based Standard Industrial Classification (SIC) level from 1977 to the year of the survey; for example, 1981. It should be noted that due to processing constraints, the growth factors lagged one year; i.e., if 1981 is the survey year, they were not based on the estimated growth from 1977 to 1981 but rather the growth from 1977 to 1980. This one-year lag had negligible effect on the estimates, particularly at the total manufacturing level where the adjusted base-year difference accounted for less than 1 percent of the estimate for total value of shipments.

These adjusted base-year differences were then added to the corresponding current-year linear estimates, which include the sum of the estimates for the mail and nonmail establishments, to produce the estimates for the years 1978-1981. Estimates developed by this procedure usually are far more reliable than comparable linear estimates developed from the current sample data alone.

The 1982 sample data included in table 3d were also developed using difference estimates. However, since the universe totals for the census year (1977 or 1982) were not known, a modification of the procedure described above was necessary. For each item in table 3d, except purchased services and breakdown of expenditures for new machinery and equipment (see further description in appendix A, section 2), linear



estimates of the publication totals from the ASM mail sample were adjusted by the difference between imputed census totals and the corresponding ASM mail sample estimates of these imputed totals. These imputed totals are obtained by applying industry average ratios to control item values at the establishment level. For example, an imputed total beginning assets figure is obtained by multiplying each establishment's total value of shipments by the industry (four-digit SIC) average for the ratio of beginning assets to shipments.

Separate estimates for the nonmail establishments were not developed. However, their contribution to the publication estimates is reflected in the difference adjustment.

The method of inventory valuation percentages included in table 3c was developed using both complete census information and ASM estimates. The percentages for the four major categories (LIFO, non-LIFO, valuation method not reported, and LIFO reported without associated value and reserve) were derived from the complete census and correspond to the values included in table 3d. The percentages for the specific non-LIFO methods of valuations (FIFO, average cost, specific costs, etc.) are ratio estimates developed from the ASM in conjunction with the census universe estimate for the total of the non-LIFO methods.

## QUALIFICATIONS OF THE DATA

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sampled lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the differences between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of the estimates.

The particular sample selected for the ASM is one of a large number of similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretical, comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected statistics in this report. Except for table 3c, they are presented in the form of relative standard errors, the standard errors divided by the estimated values to which they refer. In table 3c, "absolute" standard errors of the estimates are presented.

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete coverage value would be included in the range:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

2. From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.
3. From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown as 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total and about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors would also occur if a complete canvass were to be conducted under the same conditions as the survey.

Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected in the course of the Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or only moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown.

The concept of complete coverage under the conditions prevailing for the ASM is not identical to the complete coverage of the census of manufactures, as the censuses have been conducted. Nearly all types of operational errors that affect the ASM also occur in the censuses. The ASM and the censuses, are conducted under quite different conditions, and operational errors can be better controlled in the ASM than in the censuses. As a result, for many of the census figures, the errors are of the same order of size as the total errors of the corresponding annual survey estimates. The differences between the census and ASM operating conditions also disturb, to some degree, the comparability of the ASM and census data.

Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be of limited reliability. However, the figure may be combined with higher-level totals, creating a broader aggregate, which then may be of acceptable reliability.



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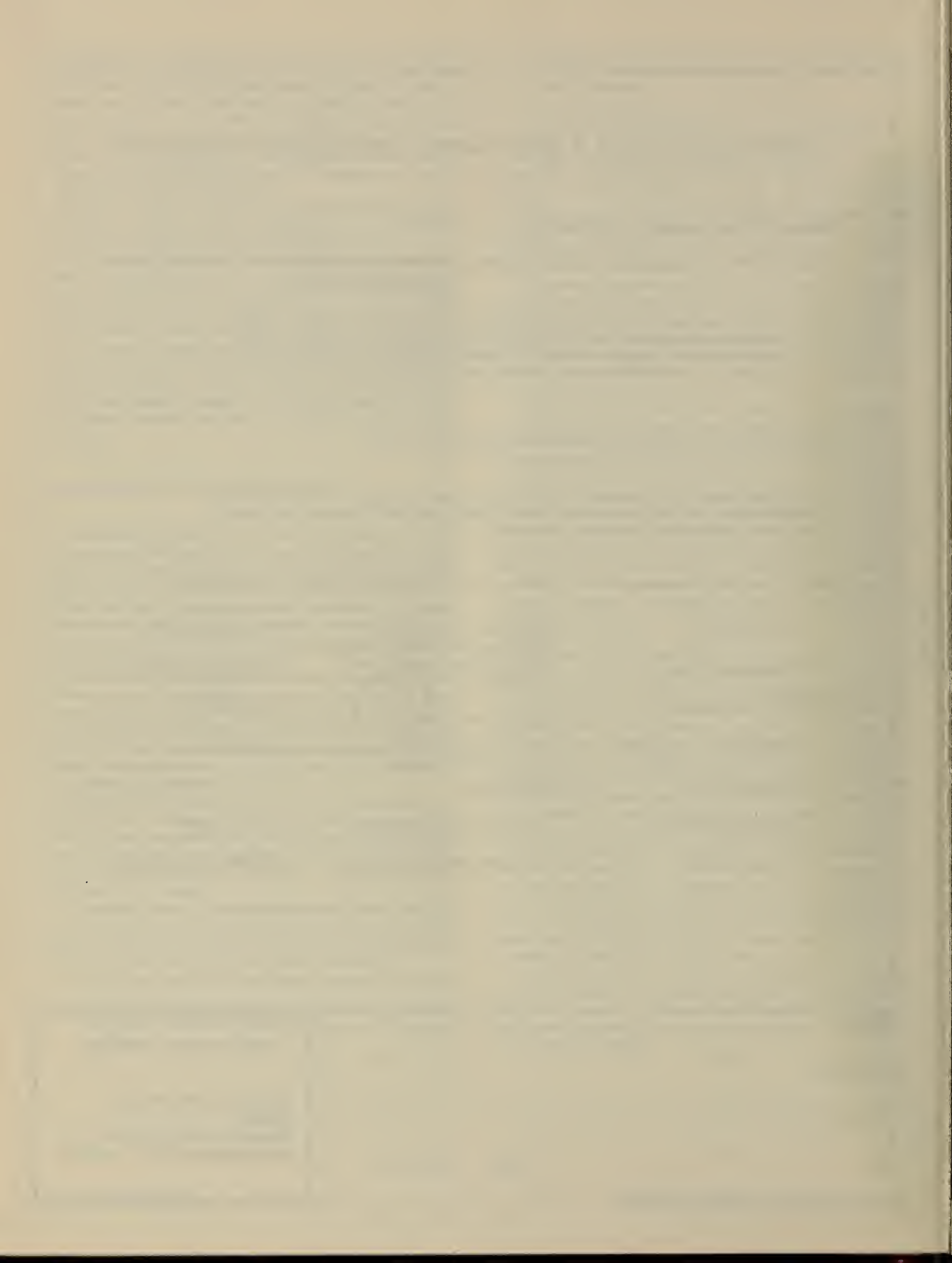
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### Microfiche

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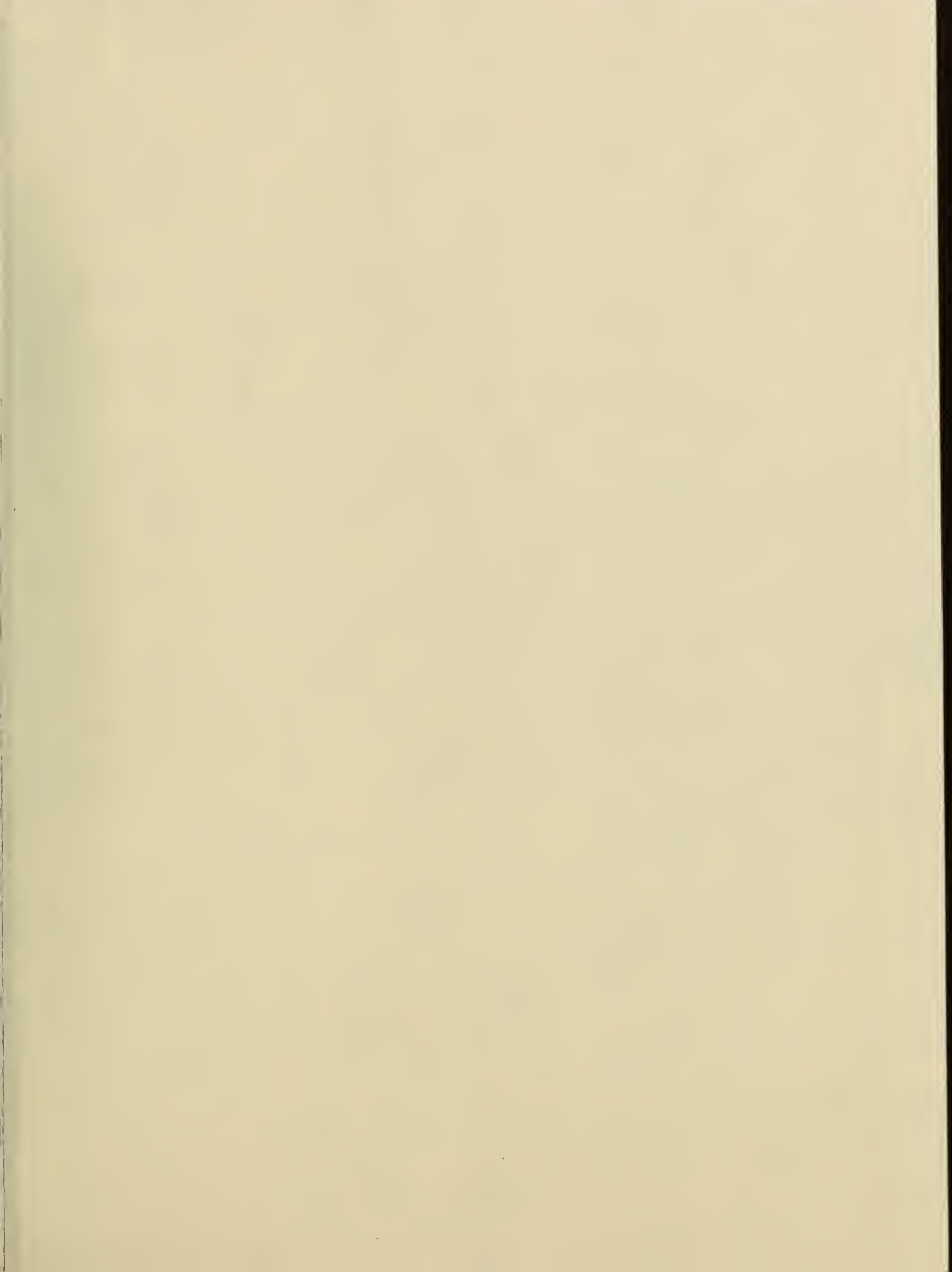
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